The PHOTOFACT Servicer

SET 433 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★MAR 1, 1959

CONTENTS PHOTOFACT SET 433

TRADE NAME AND MODEL	SET AND FOLDER NO.
TELEVISION RECEIVERS	
AIRLINE	
GTM-4044A, B, C, D, GTM-4054A, B, C, D, GTM-4144A, B, C, D, GTM-4154A, B, C, D, GTM-5044A, B, C, D, GTM-5054A, B, C, D, GTM-5144A, B, C, D, GTM-5154A, B, C, D, GTM-8118-1, -1B	433-1
RCA VICTOR (Color)	
21CD8725M, MU, 21CD8727M, MU, 21CD8776M, 21CD8777M, 21CD8845M, MU, 21CD8846M, MU, 21CD8847M, MU, 21CD8865M, MU, 21CD8866M, MU, 21CD8867M, MU, 21CD8906M, MU, 21CD8907M, MU, 21CD8910M, MU, 21CD8914M, MU, 21CT8712M, MU, 21RC8975, U, 21RC8977, U, 21RC8985, U, 21RC8987, U, 21RC8995, U, 21RC8996, U (Ch. CTC7AA, AB, AC, AD, AE, AF, AH, AJ, AK, AL, AM, AN, CRK1A, CTP6A, KRK83B, KRK84A)	433-2
PRODUCTION CHANGE BULLETIN	
AIRLINE Tel. Receiver	
GTM-4031A, B, GTM-4131A, B	433-3
FORD	
74MF, 84MF	433-3
PILOT	
AA-410A	433-3
RCA VICTOR	
8BT9E, J (Ch. RC-1164)	433-3
RAULAND	
HF155A	433-3

TRADE NAME AND MODEL	SET AND FOLDER NO.
OTHER EQUIPMENT	
ALTEC LANSING	
344A	433-4
ARVIN	
3588 (Ch. 1.45200)	433-5
DYNAMIC	
2000PA	433-6
FANFARE	
R522VM	433-7
GROMMES	
10PG8	433-8
GUILD	
785 "Grafonola"	433-9
HITACHI	
TH-621	433-10
PILOT	
AA-908	433-11
STEELMAN	
4A29, 4A29-1	433-12
TANDBERG Tape Recorder	
2, 2F, 3, 3B	433-13

This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

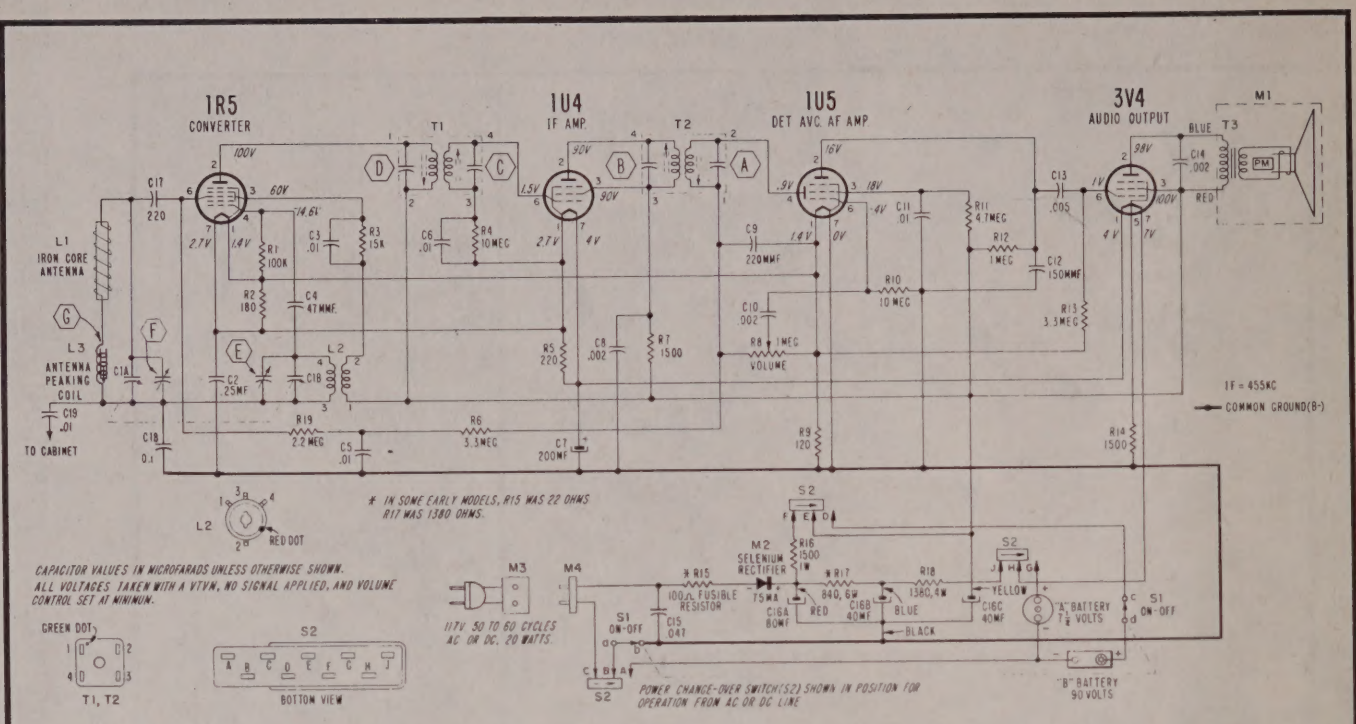
IN THIS ISSUE OF THE SERVICER:

ADMIRAL
202, 215, 217, 218
(Ch. 200)

CROSLEY
D-10GN

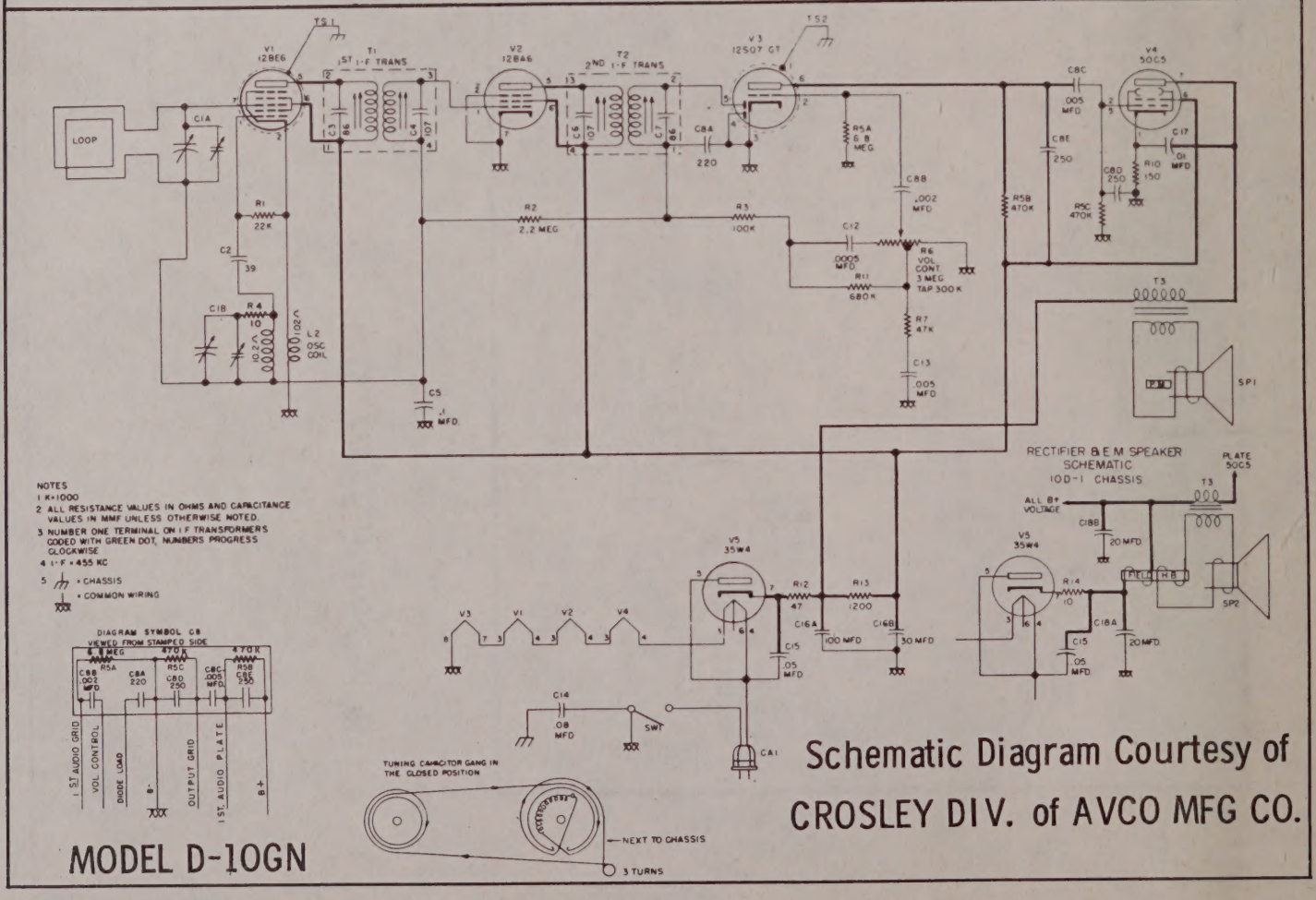
PHILCO
Tropic 3472, 3123

RAULAND
RC4202



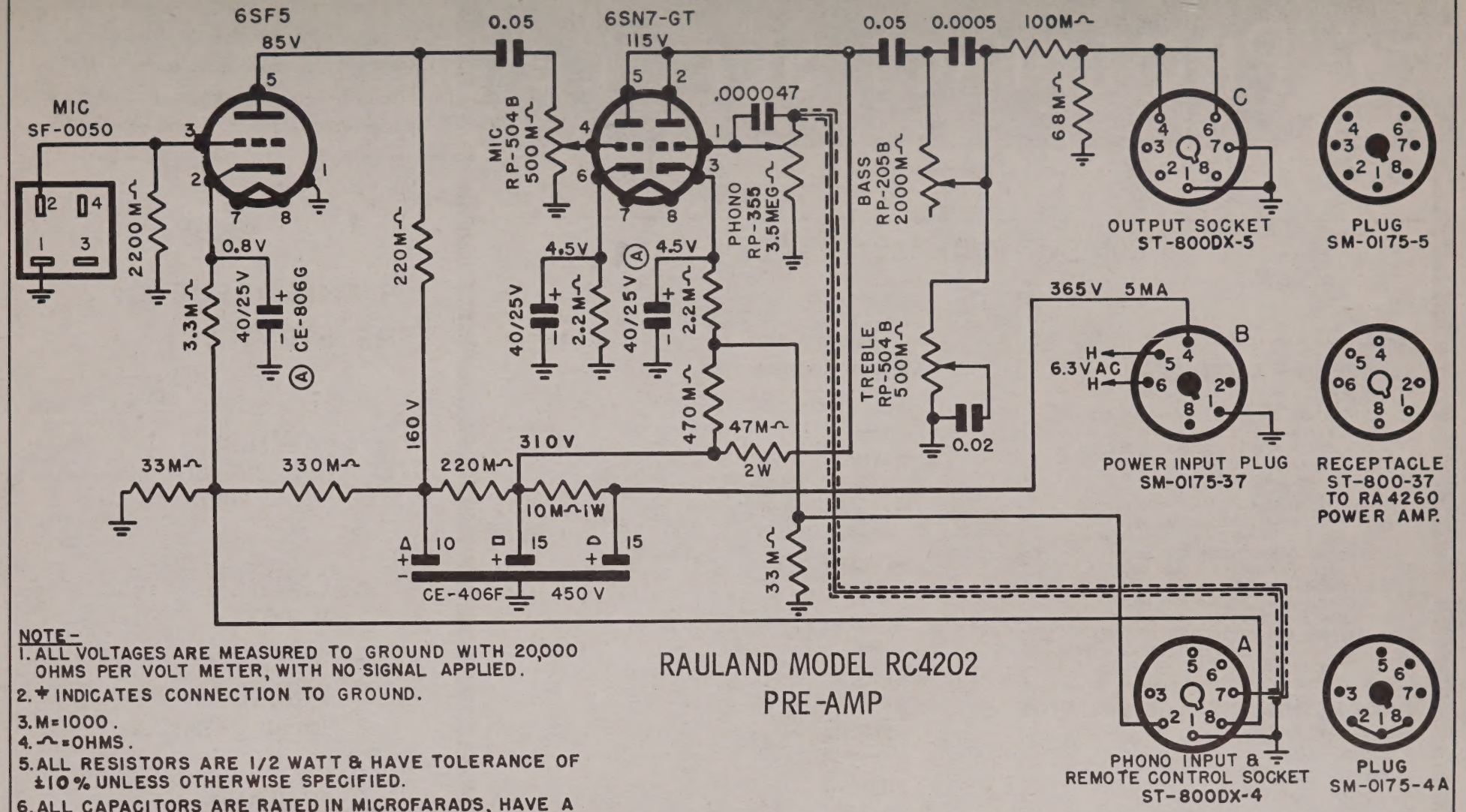
MODELS 202, 215, 217, 218 (Ch. 200)

Schematic Diagram Courtesy of ADMIRAL CORP.



MODEL D-10GN

Schematic Diagram Courtesy of CROSLEY DIV. of AVCO MFG CO.

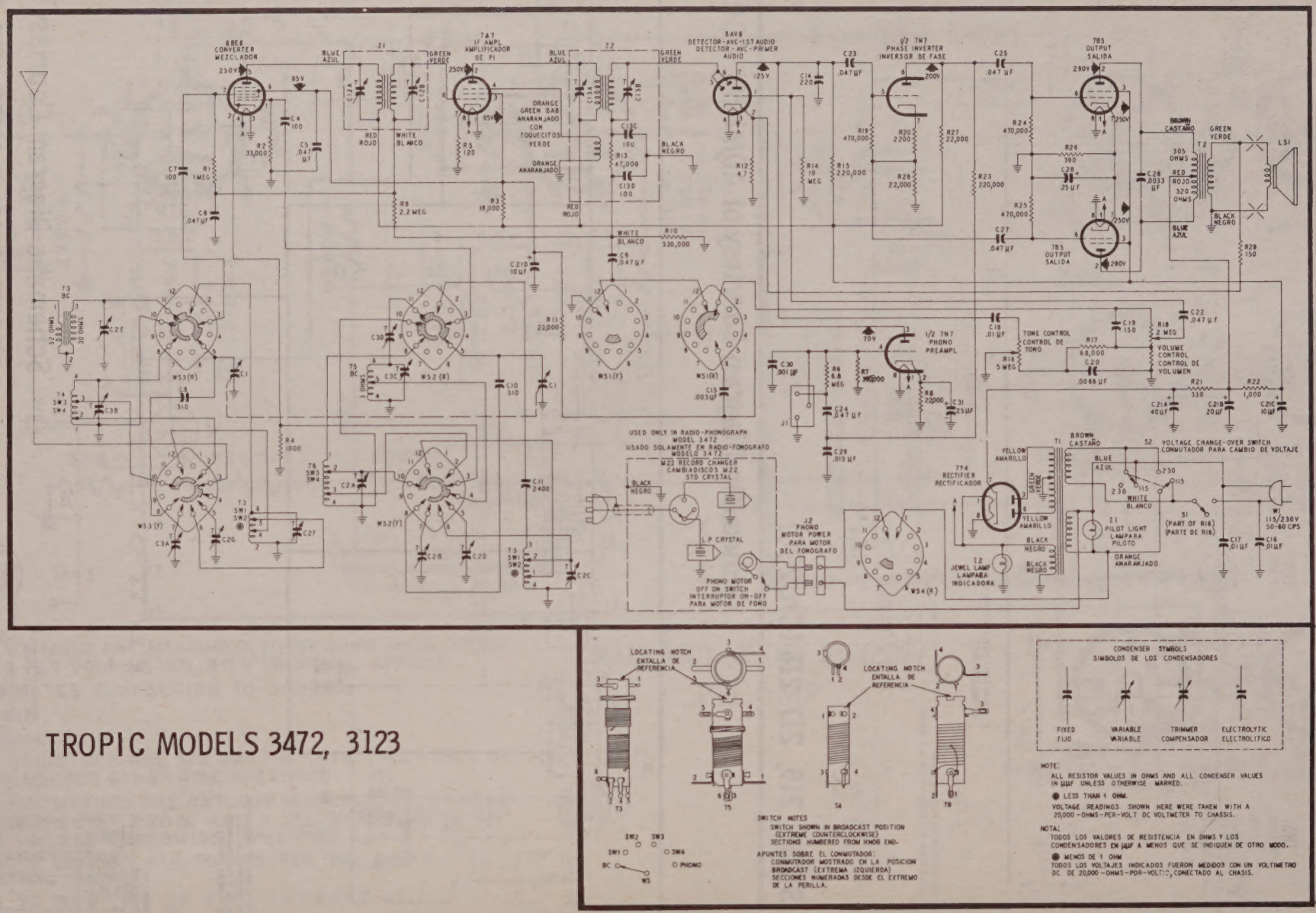


NOTE-

1. ALL VOLTAGES ARE MEASURED TO GROUND WITH 20,000 OHMS PER VOLT METER, WITH NO SIGNAL APPLIED.
2. ⏚ INDICATES CONNECTION TO GROUND.
3. M=1000.
4. ~=OHMS.
5. ALL RESISTORS ARE 1/2 WATT & HAVE TOLERANCE OF ±10% UNLESS OTHERWISE SPECIFIED.
6. ALL CAPACITORS ARE RATED IN MICROFARADS, HAVE A TOLERANCE OF ±20% AND A VOLTAGE RATING OF 600 UNLESS OTHERWISE SPECIFIED.
7. REMOVE JUMPER 1-8 TO CONTROL MIC AND 1-2 TO CONTROL PHONO.
8. H-H TO PINS 7&8 OF 6SF5 AND 6SN7-GT.

RAULAND MODEL RC4202 PRE-AMP

Schematic Diagram Courtesy of RAULAND-BORG CORP.


6BE6 CONVERTER WEZCLADOR
7A7 IF AMPL AMPLIFICADOR DE FI
6AV6 DETECTOR-AVC-1ST AUDIO DETECTOR-AVC-PRIMER AUDIO
1/2 7N7 PHASE INVERTER INVERSOR DE FASE
7B5 OUTPUT SALIDA
7B5 OUTPUT SALIDA
1/2 7N7 PHONO PREAMPL
7Y4 RECTIFIER RECTIFICADOR
TONE CONTROL CONTROL DE TONO
VOLUME CONTROL CONTROL DE VOLUMEN
VOLTAGE CHANGE-OVER SWITCH CONMUTADOR PARA CAMBIO DE VOLTAJE
PILOT LIGHT LAMPARA PILOTO
JEWEL LAMP LAMPARA INDICADORA
USED ONLY IN RADIO-PHONOGRAPH MODEL 3472
USADO SOLAMENTE EN RADIO-FONOGRAFO MODELO 3472
W22 RECORD CHANGER CAMBIADISCOS W22
STD CRYSTAL
LP CRYSTAL
PHONO MOTOR OFF ON SWITCH INTERRUPTOR ON-OFF PARA MOTOR DE FONO
J2 PHONO MOTOR POWER PARA MOTOR DEL FONOGRAFO
W1 115/230V 50-60 CPS
LS1
T1
T2
T3
T4
T5
T6
LOCATING NOTCH ENTALLA DE REFERENCIA
CONDENSER SYMBOLS
SIMBOLOS DE LOS CONDENSADORES
FIXED FIJO
VARIABLE VARIABLE
TRIMMER COMPENSADOR
ELECTROLYTIC ELECTROLITICO
SWITCH NOTES
SWITCH SHOWN IN BROADCAST POSITION (EXTREME COUNTERCLOCKWISE) SECTIONS NUMBERED FROM KNOB END.
APUNTES SOBRE EL CONMUTADOR:
CONMUTADOR MOSTRADO EN LA POSICION BROADCAST (EXTREMA IZQUIERDA) SECCIONES NUMERADAS DESDE EL EXTREMO DE LA PERILLA.
NOTE:
ALL RESISTOR VALUES IN OHMS AND ALL CONDENSER VALUES IN µµF UNLESS OTHERWISE MARKED.
● LESS THAN 1 OHM.
VOLTAGE READINGS SHOWN HERE WERE TAKEN WITH A 20,000-OHMS-PER-VOLT DC VOLTMETER TO CHASSIS.
NOTA:
TODOS LOS VALORES DE RESISTENCIA EN OHMS Y LOS CONDENSADORES EN µµF A MENOS QUE SE INDIQUEN DE OTRO MODO.
● MENOS DE 1 OHM
TODOS LOS VOLTAJES INDICADOS FUERON MEDIDOS CON UN VOLTIMETRO DC DE 20,000-OHMS-POR-VOLTIO, CONECTADO AL CHASIS.

TROPIC MODELS 3472, 3123

Schematic Diagram Courtesy of PHILCO CORP.

PHOTOFACT* Folder with CIRCUITRACE*

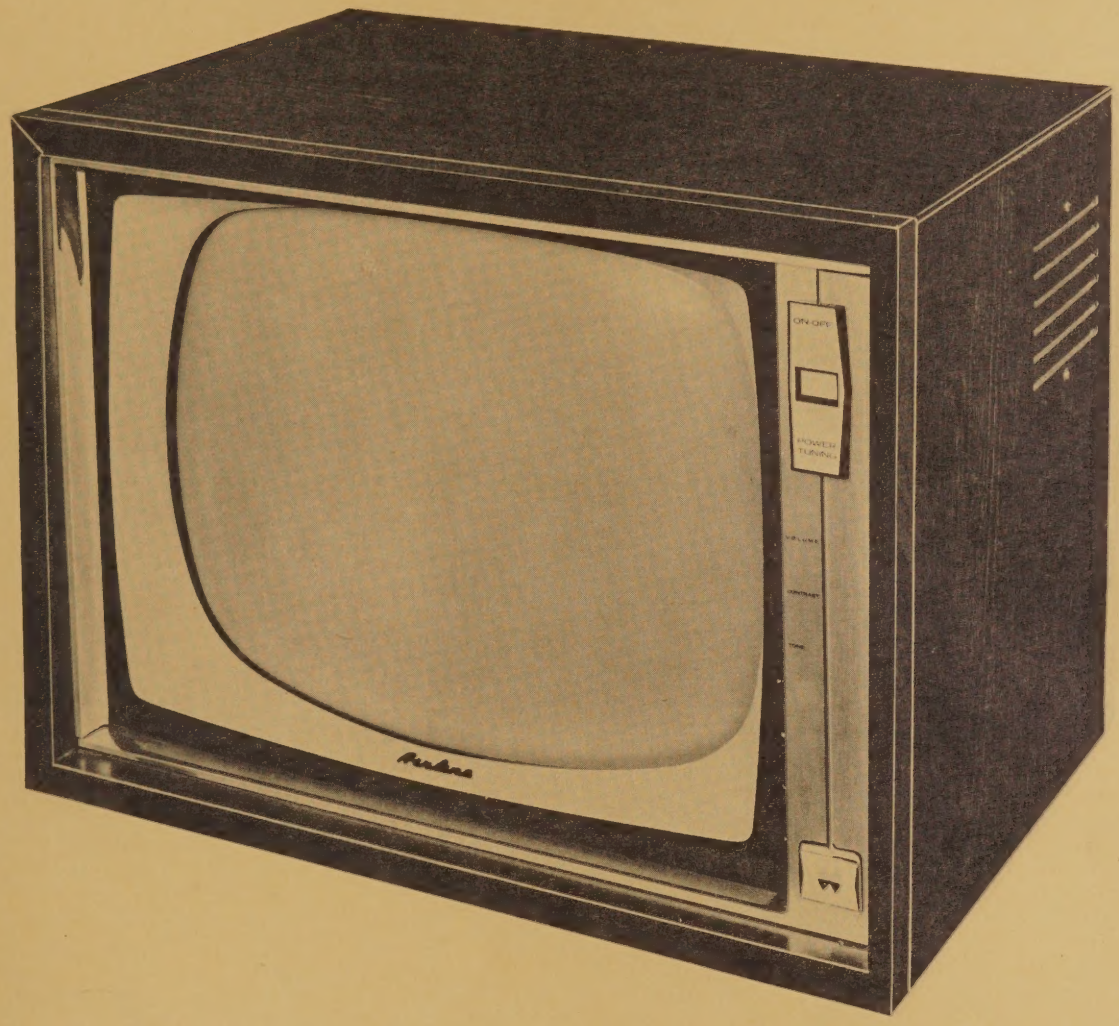
IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

AIRLINE MODELS GTM-4044A, B, C, D, GTM-4054A, B, C, D, GTM-4144A, B, C, D, GTM-4154A, B, C, D, GTM-5044A, B, C, D, GTM-5054A, B, C, D, GTM-5144A, B, C, D, GTM-5154A, B, C, D, GTM-8118-1, -1B

AIRLINE MODELS GTM-4044A, B, C, D, GTM-4054A, B, C, D, GTM-4144A, B, C, D, GTM-4154A, B, C, D, GTM-5044A, B, C, D, GTM-5054A, B, C, D, GTM-5144A, B, C, D, GTM-5154A, B, C, D, GTM-8118-1, -1B



MODEL GTM-4044A

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

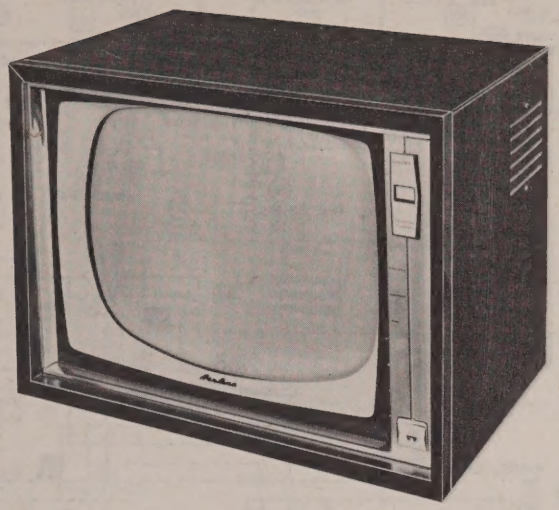
PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 8 wood screws holding rear cover. Remove the rear cover.
2. Remove 2 metal screws (inside left front) holding the escutcheon.
3. Remove 3 metal screws (from front) holding side safety glass metal trim.
4. Remove the escutcheon by lifting out.
5. Remove 7 push-on type knobs.
6. Remove 5 metal screws (from front) holding control panel.
7. Remove the speaker leads.
8. Remove 1 wood screw holding antenna terminal board.
9. Remove 6 bottom chassis bolts.
10. Remove the chassis.



MODEL GTM-4044A

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

TRADE NAME	Airline	MODELS
		GTM-4044A, B, C, D, GTM-4054A, B, C, D, GTM-4144A, B, C, D, GTM-4154A, B, C, D, GTM-5044A, B, C, D, GTM-5054A, B, C, D, GTM-5144A, B, C, D, GTM-5154A, B, C, D & Remote Control GTM-8118-1, -1B
SUPPLIER	Montgomery Ward & Co., 619 Chicago Avenue, Chicago, Illinois	
TUBES	VHF: Seventeen UHF: Eighteen	
POWER SUPPLY	105-120 Volts AC, 60 Cycle	RATING TV 185 Watts, 1.76 Amp. @ 117 Volts AC While Tuning 200 Watts, 1.9 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of the VHF Oscillator, it is necessary to remove the chassis from the cabinet. (See disassembly instructions.)

SAFETY GLASS REMOVAL

Remove 3 metal screws holding side safety glass metal trim. Remove 3 wood screws holding top safety glass metal trim. Tilt glass out and lift to remove.

SPECIAL ADJUSTMENTS

A. AGC
The AGC may be varied by the Power Tuning Tab position for each channel. Settings are "Skip", "Fringe" and "Local".

B. Auto Fine Tuning
To adjust the Auto Fine Tuning circuit tune in a station and adjust controls for a normal picture. Set the Auto-Manual switch to "Auto" position. Connect a VTVM high side to the high side of the Auto Fine Tuning control (connected to the switch). Common to chassis. Adjust the Auto Fine Tuning control for a negative .5 volts on the VTVM.

C. Focus
No provision is made to vary the focus on this receiver.

D. Sync
The Sync control can be adjusted for best picture stability. Tune in the strongest station in the area. Adjust for best picture and sound. Adjust Sync control toward the "Noisy" position until picture distorts, then back off until stable.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the Horizontal Multivibrator, it is necessary to remove the rear cover and supply power to set. Set the Horizontal Hold at the center of its range and adjust the Horizontal Frequency slug (B2) until the picture synchronizes horizontally. (For location, see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Quieting control for MINIMUM buzz and maximum sound. (For location, see tube placement chart.)

FUSE DEVICE

A 7.5Ω fusible resistor (R102) is used for low voltage power supply protection. (For location, see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

AIRLINE MODELS GTM-4044A, B, C, D, GTM-4054A, B, C, D, GTM-4144A, B, C, D, GTM-4154A, B, C, D, GTM-5044A, B, C, D, GTM-5054A, B, C, D, GTM-5144A, B, C, D, GTM-5154A, B, C, D, GTM-8118-1, -1B

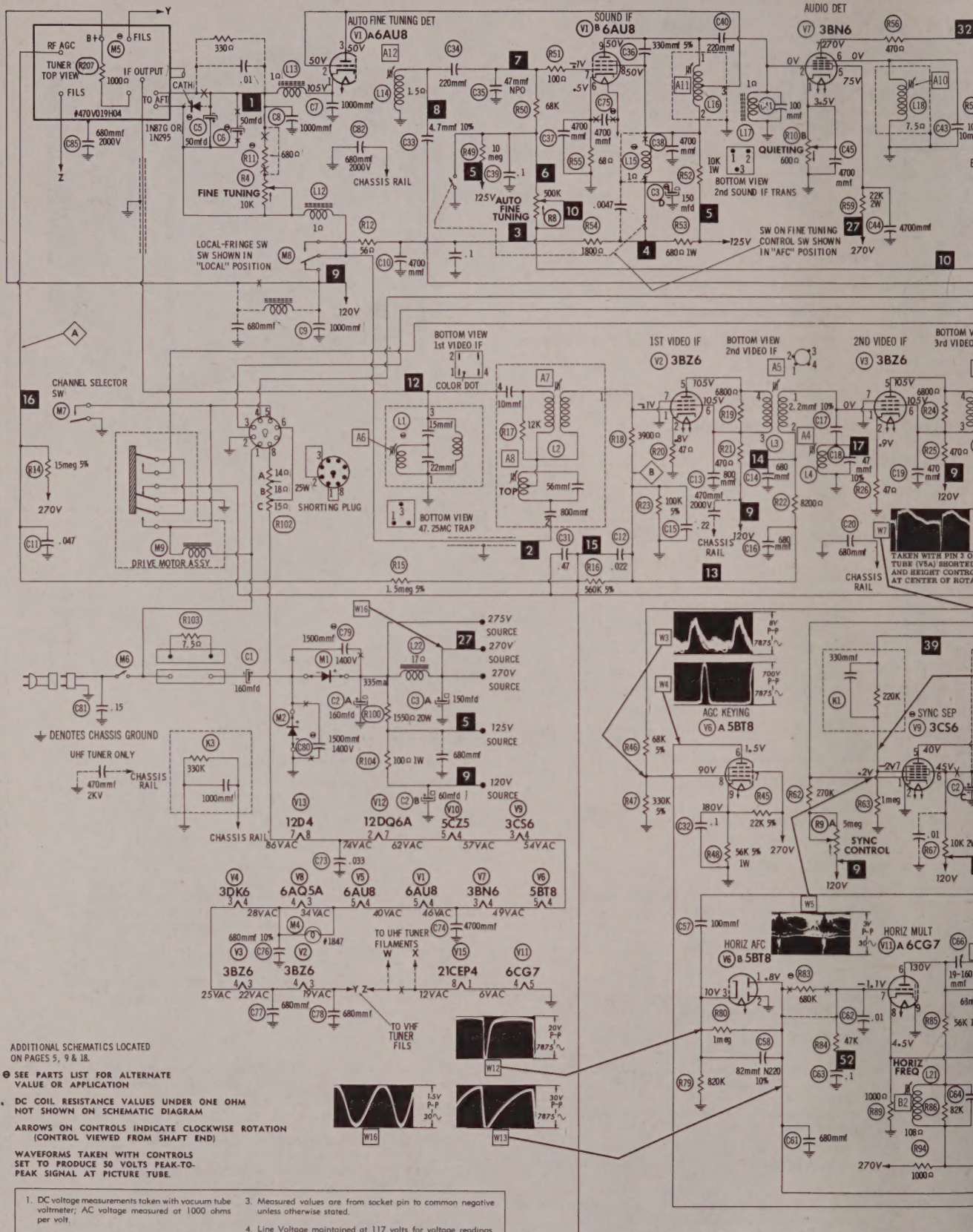
AIRLINE MODELS GTM-4044A, B, C, D, GTM-4054A, B, C, D, GTM-4144A, B, C, D, GTM-4154A, B, C, D, GTM-5044A, B, C, D, GTM-5054A, B, C, D, GTM-5144A, B, C, D, GTM-5154A, B, C, D, GTM-8118-1, -1B

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H995

SET 433 FOLDER 1



ADDITIONAL SCHEMATICS LOCATED ON PAGES 5, 9 & 18.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

• DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

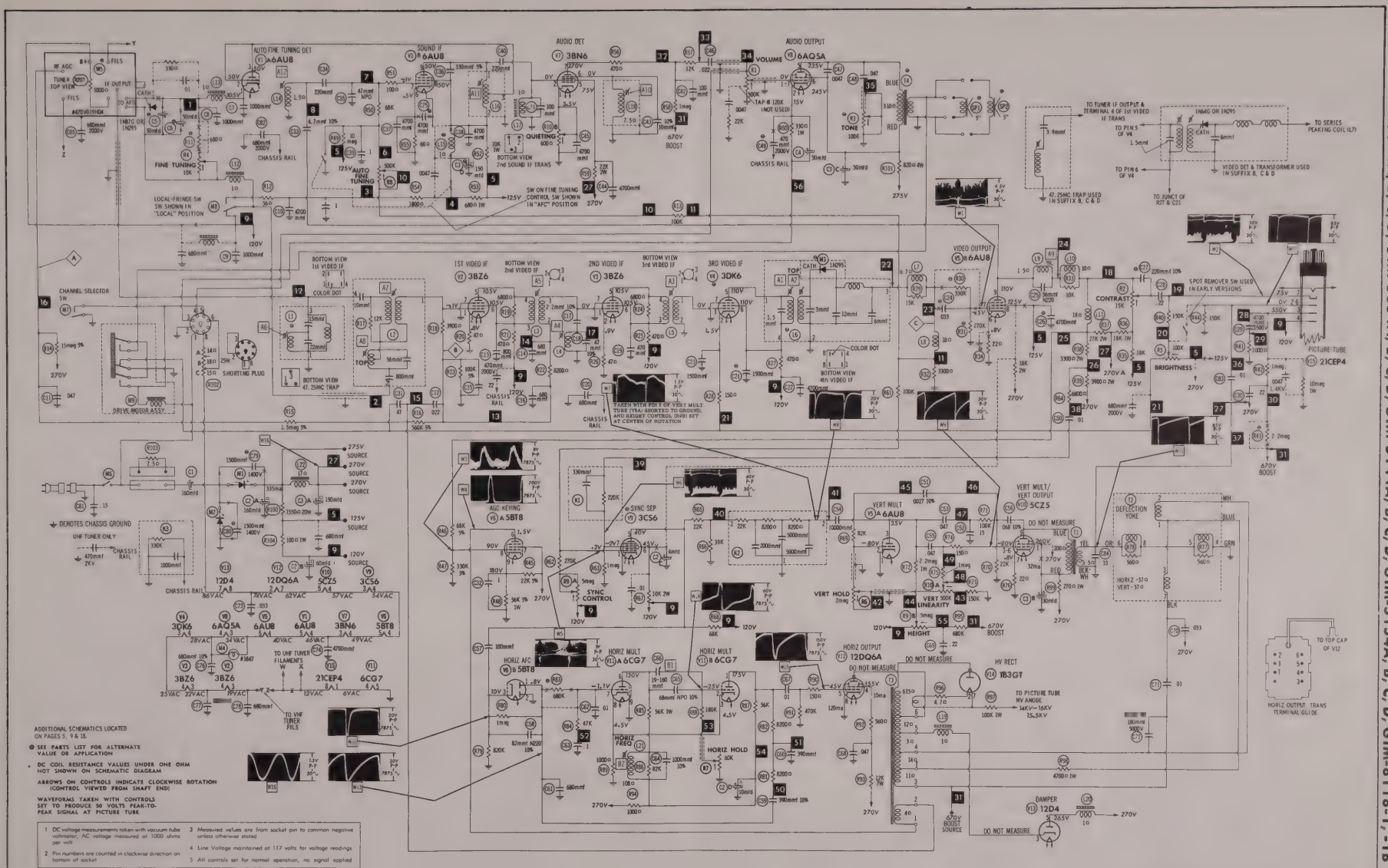
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

©Howard W. Sams & Co., Inc. 1959

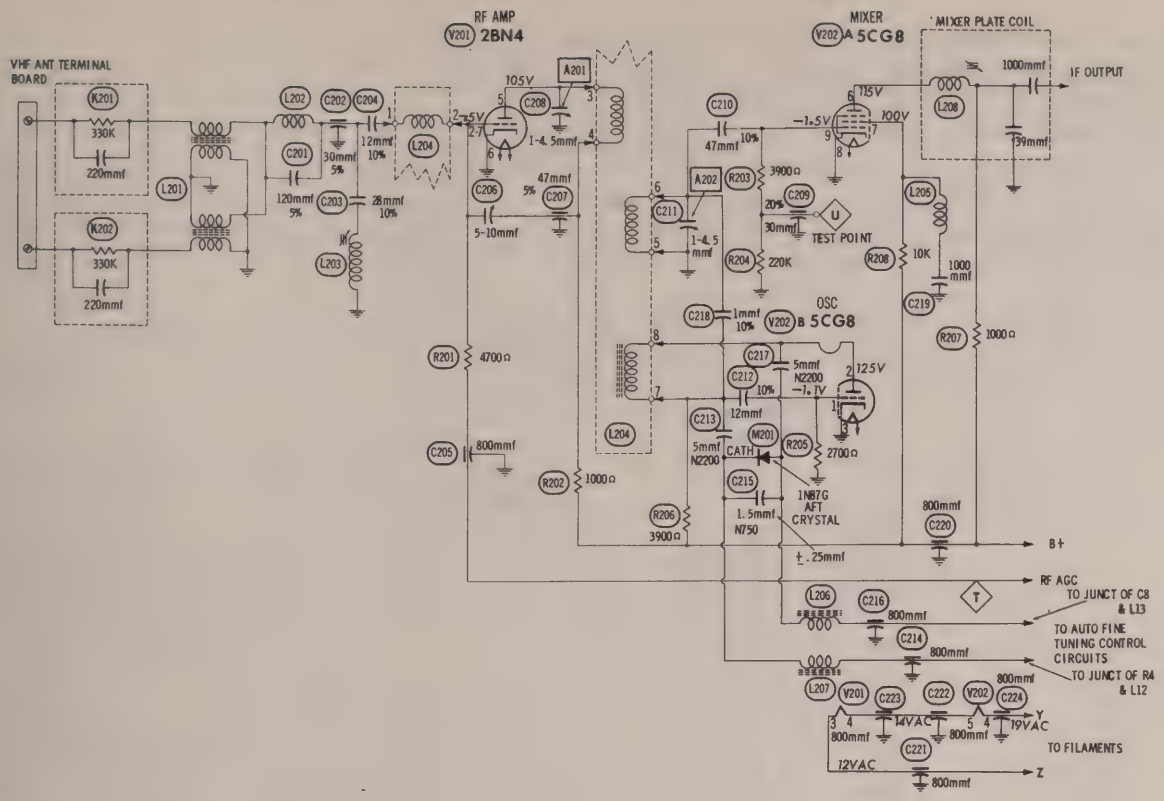

AUTO FINE TUNING DET V1 A 6AU8
SOUND IF V1 B 6AU8
AUDIO DET V7 38N6
AUDIO OUTPUT V8 6AQ5A
VOLUME
TONE
QUIETING
FINE TUNING
AUTO FINE TUNING
CHASSIS RAIL
LOCAL-FRINGE SW SHOWN IN "LOCAL" POSITION
SW ON FINE TUNING CONTROL SW SHOWN IN "AFC" POSITION
BOTTOM VIEW 2nd SOUND IF TRANS
BOTTOM VIEW 1st VIDEO IF
BOTTOM VIEW 47.25MC TRAP
1ST VIDEO IF Y2 3BZ6
BOTTOM VIEW 2nd VIDEO IF
2ND VIDEO IF Y3 3BZ6
BOTTOM VIEW 3rd VIDEO IF
3RD VIDEO IF V4 3DK6
VIDEO OUTPUT V5 B 6AU8
CHANNEL SELECTOR SW
SHORTING PLUG
DRIVE MOTOR ASSY.
COLOR DOT
TAKEN WITH PIN 3 OF VERT MULT TUBE (V5A) SHORTED TO GROUND, AND HEIGHT CONTROL (R69) SET AT CENTER OF ROTATION
BOTTOM VIEW 4th VIDEO IF
CONTRAST
SPOT REMOVER SW USED IN EARLY VERSIONS
BRIGHTNESS
PICTURE TUBE 21CEP4
DENOTES CHASSIS GROUND
UHF TUNER ONLY
275V SOURCE
270V SOURCE
125V SOURCE
120V SOURCE
12D4 12DQ6A 5CZ5 3CS6
3DK6 6AQ5A 6AU8 6AU8 3BN6 5BT8
3BZ6 3BZ6 21CEP4 6CG7
TO UHF TUNER FILAMENTS
TO VHF TUNER FILS
AGC KEYING V6 A 5BT8
SYNC SEP V5 3CS6
SYNC CONTROL
VERT MULT V5 A 6AU8
VERT MULT/ VERT OUTPUT V10 5CZ5
VERT HOLD
VERT LINEARITY
HEIGHT
DO NOT MEASURE
DEFLECTION YOKE
HORIZ -37Ω VERT -37Ω
HORIZ AFC V8 B 5BT8
HORIZ MULT V11 A 6CG7
HORIZ MULT V11 B 6CG7
HORIZ FREQ
HORIZ HOLD
HORIZ OUTPUT V12 12DQ6A
HV RECT V14 1B3GT
TO PICTURE TUBE HV ANODE 14KV–16KV 15.5KV
HORIZ OUTPUT TRANS TERMINAL GUIDE
TO TOP CAP OF V12
DAMPER V13 12D4
670V BOOST SOURCE
TO TUNER IF OUTPUT & TERMINAL 4 OF 1st VIDEO IF TRANS
TO PIN 5 OF V4
TO PIN 6 OF V4
TO JUNCT OF R27 & C21
47.25MC TRAP USED IN SUFFIX B, C & D
VIDEO DET & TRANSFORMER USED IN SUFFIX B, C & D
TO SERIES PEAKING COIL (L7)
ADDITIONAL SCHEMATICS LOCATED ON PAGES 5, 9 & 18.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1959
AIRLINE MODELS GTM-4044A, B, C, D, GTM-4054A, B, C, D, GTM-4144A, B, C, D, GTM-4154A, B, C, D, GTM-5044A, B, C, D, GTM-5054A, B, C, D, GTM-5144A, B, C, D, GTM-5154A, B, C, D, GTM-8118-1, -1B

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

AIRLINE MODELS GTM-4044A, B, C, D, GTM-4054A, B, C, D, GTM-4144A, B, C, D, GTM-4154A, B, C, D, GTM-5044A, B, C, D, GTM-5054A, B, C, D, GTM-5144A, B, C, D, GTM-5154A, B, C, D, GTM-8118-1, -1B FOLDER 1

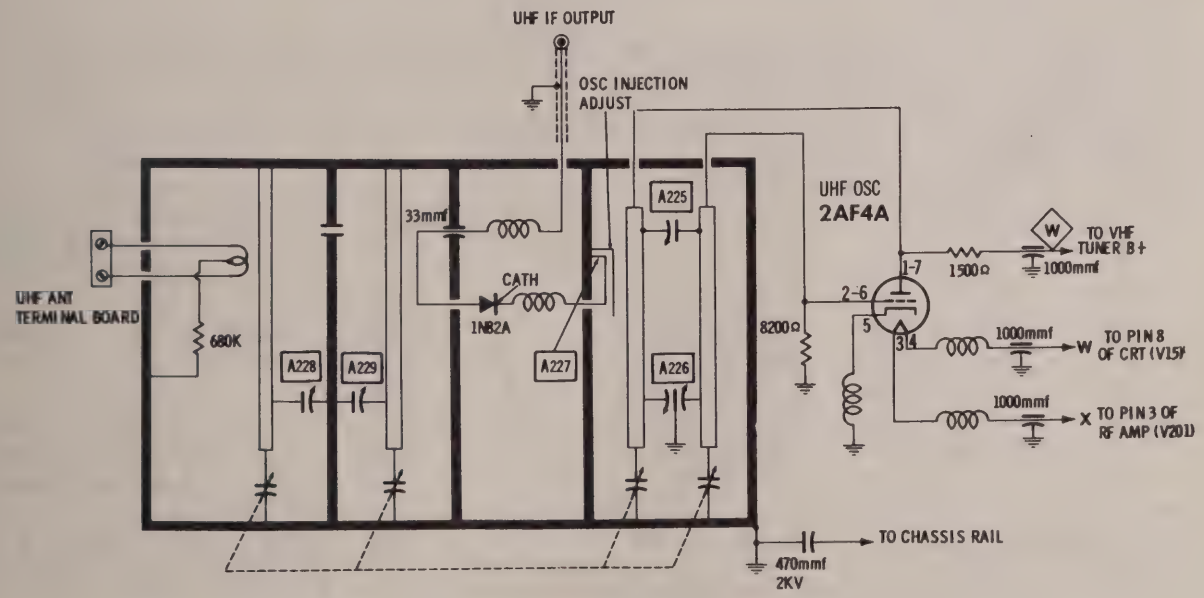
A Howard W. Sams CIRCUITRACE® Photo



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

VHF TUNER 470V019H04



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

UHF TUNER 472V024H03

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS FOR TUNERS 470V019H04, 470V019H05

Use an ISOLATION TRANSFORMER to PROTECT the Test Equipment.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested alignment tools: A201, A202 ..... General Cement #5000, 5003,5014, 5015, 5016, 8276, 8290
Walsco #2512, 2515, 2522, 2523, 2525, 2537

VHF OSCILLATOR ALIGNMENT

The individual channel adjustment screws are accessible one at a time, thru a hole in the front of the tuner, as the Channel Selector is rotated. Set the Fine Tuning to the center of its range and switch to channel to be adjusted and adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point (T). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across antenna terminals thru matching network (Fig. 201).	207MC	205.25MC 209.75MC	12	Vert. Amp. thru 10K to point (U). Low side to chassis.	A201, A202	Adjust for response curve similar to Fig. 202 with markers above 90%.
2.	"	"	213MC	211.25MC 215.75MC	13	"		Check for response similar to Fig. 202. If markers fall below 70% on any channel, make compromise adjustments of A201, and A202 with channel switch set to that channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
			177MC	175.25MC 179.75MC	7			
			85MC	83.25MC 87.75MC	6			
			79MC	77 25MC 81.75MC	5			
			69MC	67.25MC 71 75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			

PRE-ALIGNMENT INSTRUCTIONS FOR TUNER 470V021H05

Use an ISOLATION TRANSFORMER to PROTECT the Test Equipment.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point (T). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across antenna terminals thru matching network (Fig. 201).	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point (U). Low side to chassis.	A201, A202, A203	Adjust for maximum gain and symmetry of response similar to Fig. 202 with markers as shown. Adjust bandwidth by moving lead of Mixer Return Capacitor with respect to RF Plate return strap.
2.	"	"	195MC	193.25MC 197.75MC	10	"	A204, A205	Adjust for maximum gain and symmetry of response similar to Fig. 202 with markers as shown.
3.	"	"	177MC	175.25MC 179.75MC	7	"	A206, A207	"
4.	"	"	85MC	83.25MC 87.75MC	6	"	A208, A209, A210	Adjust for maximum gain and symmetry of response similar to Fig. 202 with markers as shown. NOTE: Heat wax to loosen for alignment.
5.	Fig. 203	High side to point (V). Low side to chassis.	44MC	41.25MC 45.75MC	UHF	"	A211, A212	Disconnect coil between UHF jack (point (V)) and chassis. Adjust for response shown in Fig. 204. Replace coil.

TUNER ALIGNMENT INSTRUCTIONS (cont)

VHF OSCILLATOR ALIGNMENT

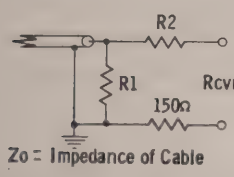
Connect negative lead of a 4.5 volt bias supply to the IF AGC line. Positive to chassis.
Set the Automatic Fine Tuning selector in Manual Fine Tuning position and set Fine Tuning control to the center of its range.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Fig. 201	Across antenna terminals thru matching network (Fig. 201).	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A213	Adjust to place sound marker in trap notch as in Fig. 205. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A214	
			201MC	199.25MC 203.75MC	11		A215	
			195MC	193.25MC 197.75MC	10		A216	
			189MC	187.25MC 191.75MC	9		A217	
			183MC	181.25MC 185.75MC	8		A218	
			177MC	175.25MC 179.75MC	7		A219	
			85MC	83.25MC 87.75MC	6		A220	
			79MC	77.25MC 81.75MC	5		A221	
			69MC	67.25MC 71.75MC	4		A222	
			63MC	61.25MC 65.75MC	3		A223	
			57MC	55.25MC 59.75MC	2		A224	

UHF TUNER ALIGNMENT

Remove the front cover and make sure that inner cover is on tight.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Fig. 201	Across UHF antenna terminals thru matching network (Fig. 201). Loosely couple VHF marker generator to UHF tuner output cable. Loosely couple UHF marker generator to sweep generator cable.	464MC	44MC & 464MC	Tuning gang fully closed	Vert. Amp. thru network in Fig. 206 to point Ⓦ. Low side to chassis.	A225	Adjust for zero beat.
8.	"	"	897MC	44MC 897MC	Tuning gang fully open	"	A226	"
9.	Disconnect sweep and marker generators. Slowly rotate UHF tuning shaft while observing meter readings. Adjust injection shield (A227) so that meter reads between .5 and 5 ma in all positions of rotor shaft. Replace front cover.							
10.	Fig. 201	Across UHF antenna terminals thru matching network (Fig. 201). Loosely couple marker generator to sweep cable.	467MC	465.25MC 469.75MC	Back rotor shaft off from high freq. end approx. 3°	Vert. Amp. thru network in Fig. 206 to point Ⓦ. Low side to chassis.	A228, A229	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown. Check tracking throughout UHF band and make compromise adjustments where necessary.



Zo	R1	R2
50Ω	56Ω	120Ω
75Ω	82Ω	110Ω

FIG. 201

FIG. 202

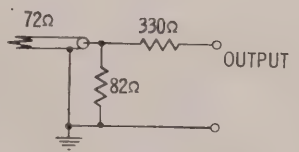


FIG. 203

FIG. 204

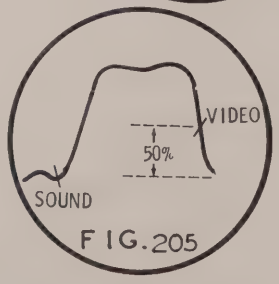


FIG. 205

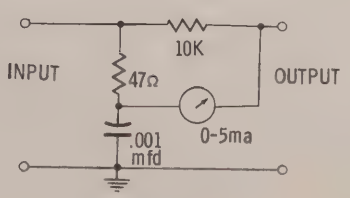


FIG. 206

AIRLINE MODELS GTM-4044A, B, C, D, GTM-4054A, B, C, D, GTM-4144A, B, C, D, GTM-4154A, B, C, D, GTM-5044A, B, C, D, GTM-5054A, B, C, D, GTM-5144A, B, C, D, GTM-5154A, B, C, D, GTM-8118-1, -1B

FOLDER 1

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER to PROTECT the Test Equipment.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A1 thru A12 .... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 12 volt bias supply to point (A). Positive to chassis.
Connect the negative lead of a 4 volt bias supply to point (B). Positive to chassis.
Set the Local-Fringe switch to "Fringe".
Set to manual tuning.
Connect a 470mmf capacitor across the input leads of the scope and VTVM.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

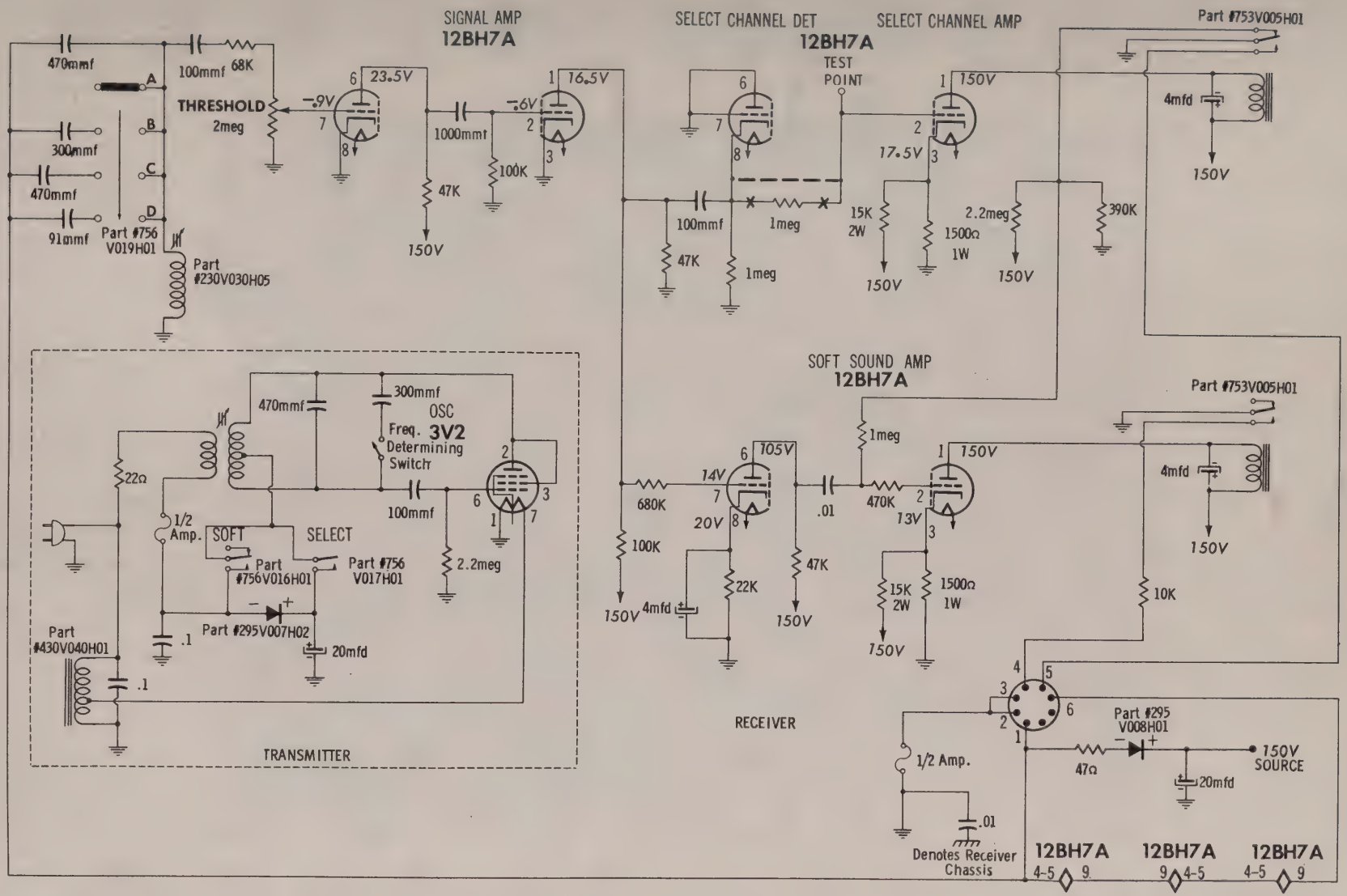
	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001mfd	High side to pin 1 (grid) of 3DK6 (V4). Low side to chassis.	44.0MC (10MC Swp)	43.9MC	Any non-interfering channel	Vert. Amp. thru 47K to point (C). Low side to chassis. (Across Video Det. load)	A1, A2	Preset Mixer Plate Coil and A7 slugs fully counterclockwise. Adjust A1 for maximum deflection and A2 to center marker.
2.	"	High side to pin 1 (grid) of 1st Video IF Amp. (V2). Low side to chassis.	Not used	43.1MC	"	USE VTVM DC probe thru 47K to point (C). Common to chassis.	A3	Adjust for maximum deflection.
3.	"	"	"	47.25MC	"	"	A4	Adjust for MINIMUM deflection.
4.	"	"	"	45.2MC	"	"	A5	Adjust for maximum deflection.
5.	"	"	44.0MC (10MC Swp)	41.25MC 42.25MC 43.0MC 45.0MC 45.75MC 47.25MC	"	Vert. Amp. thru 47K to point (C). Low side to chassis.	A3, A4	Retouch A3 and A4, if necessary for response similar to Fig. 1.
6.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	Not used	50.0MC	13	USE VTVM DC probe thru 47K to point (C). Low side to chassis.	A6	Adjust for MINIMUM deflection. NOTE: If adjacent channel sound interferes tune A6 to MINIMUM at 47.25MC.
7.	"	"	"	44.1MC	"	"	Mixer Plate Coil	Adjust for maximum deflection.
8.	"	"	"	43.0MC	"	"	A7	"
9.	"	"	"	40.8MC	UHF (Or between Channels)	"	A8	Set Local-Fringe switch to "Local". Adjust for MINIMUM deflection.
10.	"	"	44.0MC (10MC Swp)	45.75MC 41.25MC	12	Vert. Amp. thru 47K to point (C). Low side to chassis.	Mixer Plate Coil	Retouch Mixer Plate Coil, if necessary to place 45.75MC marker at 50% on curve as in Fig. 2.
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	211.25MC (10MC Swp)	41.25MC 45.75MC	13	"	Fine Tuning	Check for response similar to Fig. 2. Adjust Fine Tuning to be sure that its range tunes 45.75MC marker equally from 50%. Repeat all channels available in the area. Push slider on programming wheel from Local to Fringe position and back to Local. Check response as in Fig. 2 for correct trapping action.

4.5MC TRAP ALIGNMENT

Connect a clip lead between pin 1 (grid) of 3DK6 (V4) and chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	.01mfd	High side to point (C). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	Detector probe to pin 2 (grid) of 3BN6 (V7). Common to chassis.	A9	Adjust for maximum deflection. Remove clip lead from pin 1 of V4 and chassis.

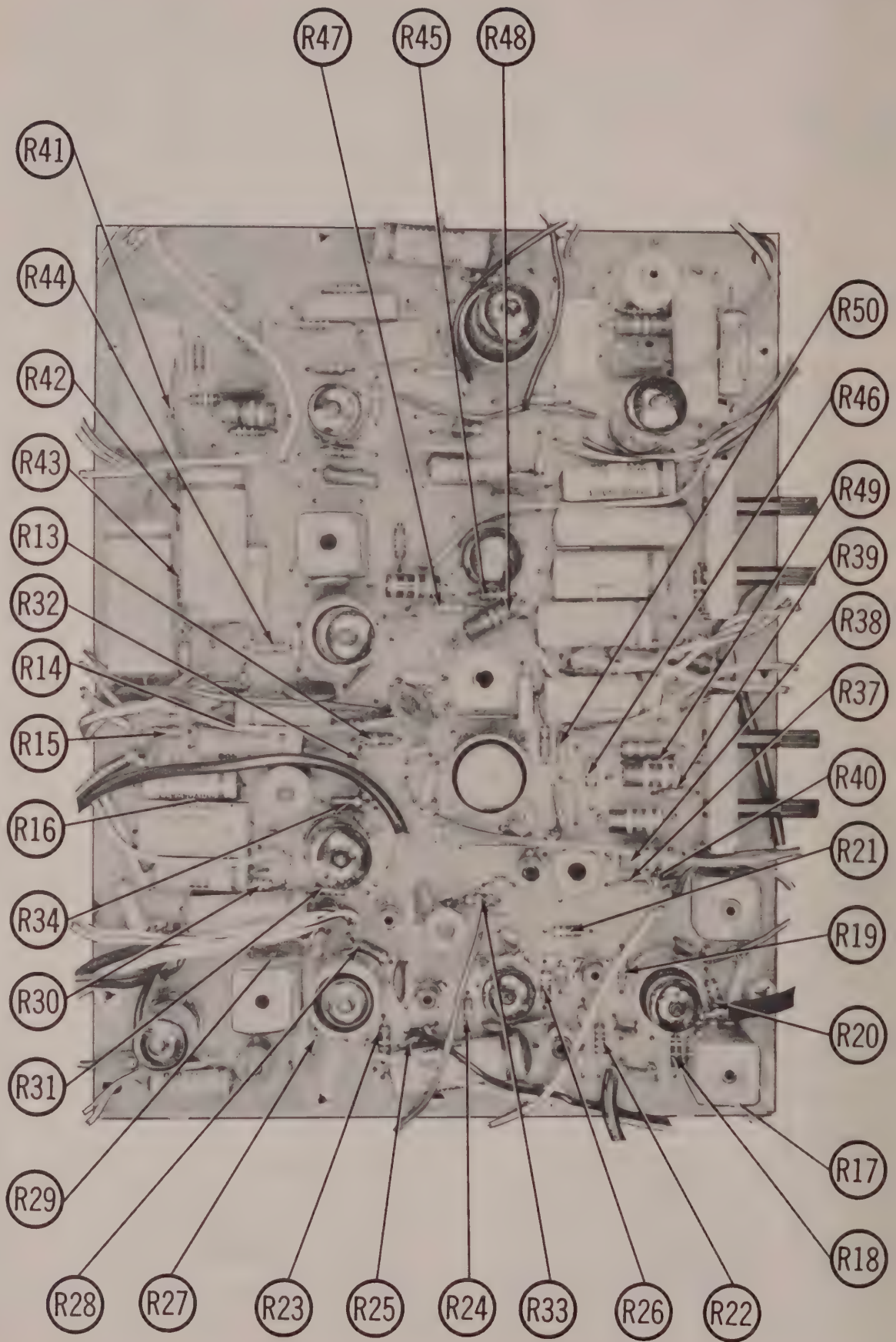
continued PAGE 17



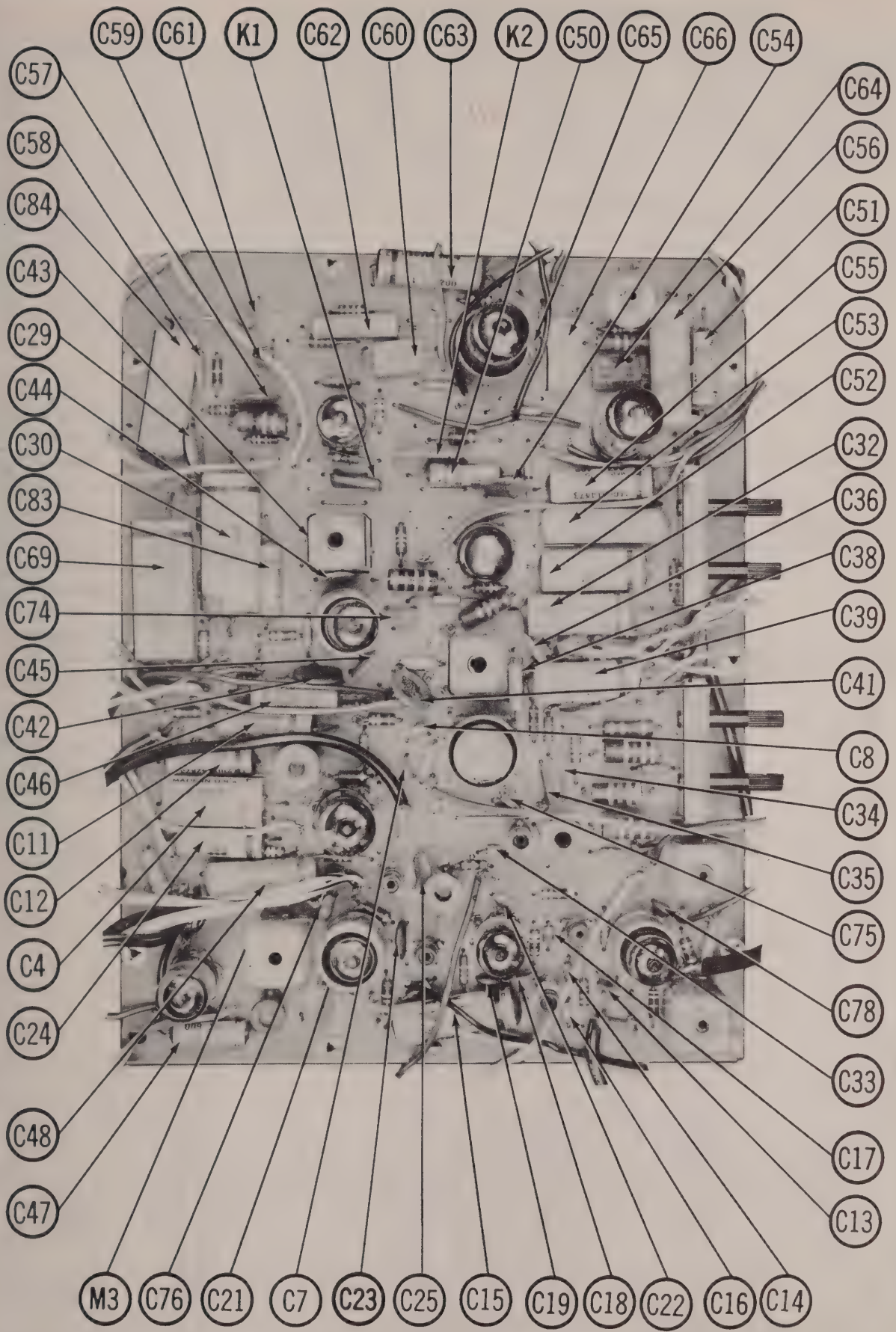
A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

REMOTE CONTROL GTM-8118-1, -1B



PRINTED BOARD - RESISTOR IDENTIFICATION (R13-R50)



PRINTED BOARD - CAPACITOR IDENTIFICATION

SET 433 FOLDER 1

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Auto Fine Tuning Det. - Sound IF Amp.	6AU8	
V3	1st Video IF Amp.	3BZ6	
V3	2nd Video IF Amp.	3BZ6	
V4	3rd Video IF Amp.	3DK6	3CB6 *
V5	Video Output-Vert. Mult	6AU8	
V8	AGC Keying-Horiz. AFC	5BT8	
V7	Audio Det.	3BN6	

ITEM No.	USE	TYPE	NOTES
V8	Audio Output	6AQ5A	3BY6 *
V9	Sync Sep.	3CN6	
V10	Vert. Mult. -Vert. Output	5CZ5	
V11	Horiz. Mult.	6CG7	
V12	Horiz. Output	12DQ8A	
V13	Damper	12D4	
V14	HV Rect.	1B3GT	

* Alternate.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	AIRLINE PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V15	21CEP4		21CEP4 ①	21CEP4 ②	① "Silverama" ③ ② "Silver Screen 55"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	160	300	218V021H01	AFHJ-31-75	XAD266	FP131	TMB-34	S-160	TVL-1473
C2A	≤160	350	218V020H01	AFHS4-56-95	XDD696	FP419.65	TMQ-180	T-115 MTD-308	TVL-4605.5
B	≤50	300							
C	4	300							
D	≤10	300							
C3A	≤150	300	218V041H01	AFH4-02-80					TVLS-4589*
B	≤30	300							
C	30	300							
D	≤150	300							
C4	50	25	218V019H01	PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206
C5	50	25	218V019H01 ①	PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206
C6	50	25	218V019H01 ①	PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206

* Not normally in distributors stock. Available through distributor on order to manufacturer.
① Some versions may use a single 100mfd ⓑ 25VDC (Part #218V025H14) to replace C5 and C6.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C7	1000			BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C8	1000			BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C9	1000			BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C10	4700			BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C11	.047	400		P468N-047		CUB4S47	GEM-4147	4TM-S47	
C12	.022	200		P288N-022		CUB4S22	GEM-4122	4TM-S22	
C13	800			BPD-0008	DD-801	L10T8	B-382	5GA-T8	
C14	680			BPD-00068	DD-681	BYA10T68	B-368	5GA-T68	
C15	.22	200		P288N-22		CUB4P22	GEM-2022	4TM-P22	
C16	680			BPD-00068	DD-681	BYA10T68	B-368	5GA-T68	
C17	2.2		217V012A29	NPO-DI 2.2	TCZ-2R2	C10Y2C	CNO-522	5TCCB-Y22S 10% *	10%
C18	47			BPD-000047	DD-470	L10Q47	CNO-447	5TCC-Q47S 10% *	10%
C19	470			BPD-0047	DD-471	BYA10T47	B-347	5GA-T47	
C20	680		215V300H19	BPD-00068	DD-681	BYA10T68	B-368	5GA-T68	
C21	1500			BPD-0015	DD-152	BYA10D15	B-215	5HK-D15	①
C22	4700			BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C23	1500			BPD-0015	DD-152	BYA10D15	B-215	5HK-D15	
C24	.033	200		P288N-033		CUB4S33	GEM-4133	4TM-S33	② N220
C25	56								③
C26	4700			BPD-0047	DD-472	BYA10D47M	B-347	5HK-D47	
C27	220			DI-220	MD-221	L10T22	JL-322	5GA-T22S 10% *	10% ③
C28	.22	400		P468N-22		CUB4P22	GEM-2022	4TM-P22	
C29	4700	1500	215V300H01	HVD-15-4700	DD30-472	HVC20D47	2HV-215		
C30	.33	600		P688N-33		CUB6P33	GEM-6033	6TM-P33	
C31	.47	200		P288N-47		CUB2P47	GEM-2047	2TM-P47	
C32	.1	400		P468N-1		CUB4P1	GEM-401	4TM-P1	
C33	4.7		217V014A79	NPO-DI 4.7	TCZ-4R7	C7A6Y47C	CNO-547	5TCCB-Y47S 10% *	10%
C34	220			BPD-00022	DD-221	L10T22	B-322	5GA-T22	
C35	47			NPO-DI 47	DD-470	C10Q47C	CNO-447	5TCC-Q47	NPO
C36	330		215V073A31	1469-00033		SR5T33		MS-333	5%
C37	4700			BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C38	4700			BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C39	.1	400		P468N-1		CUB4P1	GEM-401	4TM-P1	
C40	220			BPD-00022	DD-221	L10T22	B-322	5GA-T22	
C41	100			BPD-0001	DD-101	L10T1	CNO-310	5GA-T1	
C42	100			BPD-0001	DD-101	L10T1	CNO-310	5GA-T1	
C43	10			NPO-DI 10	DD-100	L10Q1	CNO-410	5TCC-Q1S 10% *	10%
C44	4700			BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C45	4700			BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C46	.022	400		P468N-022		CUB4S22	GEM-4122	4TM-S22	
C47	.0047	600		P688N-0047	DD-472	CUB6D47	GEM-6247	6TM-D47	
C48	.047	600		P688N-047		CUB6S47	GEM-6147	6TM-D47	
C49	470	3000	215V300H20	HVD-30-470	DD30-471	HVB20T47	2HV-347	20GA-T47	①
C50	.01	400		P488N-01	DD-103	CUB4S1	GEM-411	4TM-S1	
C51	.0027	600						5TM-D27S 10% *	10%
C52	.15	200	210V041A54	P288N-15		CUB2P15	GEM-2015	2TM-P15	
C53	.047	600		P688N-047		CUB6S47	GEM-6147	6TM-S47	
C54	10000			BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C55	.047	400		P488N-047		CUB4S47	GEM-4147	4TM-S47	
C56	.068	600					GEM-6168	6TM-S68S 10% *	10%
C57	100			BPD-0001	DD-101	L10T1	CNO-410	5GA-T1	
C58	82		215V028A30				CNO-482		N220 10%
C59	390			DI-390	MD-391	L10T39		5GA-T39S 10% *	10%
C60	390			1468-00039		SW5T39		MS-339	
C61	680			BPD-00068	DD-681	BYA10T68	B-368	5GA-T68	
C62	.01	400		P488N-01	DD-103	CUB4S1	GEM-411	4TM-S1	
C63	.1	200	210V001A04	P288N-1		CUB2P1	GEM-201	2TM-P1	
C64	1000		213V071A02	1454-001		1R5IX	MCB255	MS-21	
C65	68			NPO-DI 68	DT2-68	L10Q68	CNO-468	5TCC-Q68S 10% *	NPO 10%
C66	19-180		217V501H01						

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C67	.01	400		P488N-01	DD-103	CUB4S1	GEM-411	4TM-S1	
C68	.047	400		P488N-047		CUB4S47	GEM-4147	4TM-S47	
C69	.22	600		P688N-22		CUB6P22	GEM-6022	6TM-P22	
C70	.033	600		P688N-033		CUB6S33	GEM-6133	6TM-S33	
C71	.01	400		P488N-01	DD-103	CUB4S1	GEM-411	4TM-S1	
C72	180	5000							N1500 5%
C73	.033	600	210V213A33	P688N-033		CUB6S33	GEM-6133	6TM-S33	
C74	4700			BPD-0047	DD-472	BYA10D47M	B-347	5HK-D47	
C75	4700			BPD-0047	DD-472	BYA10D47M	B-347	5HK-D47	①
C76	680			DT-680	MD-681		JL-368	5GA-T68S 10% *	10%
C77	680			BPD-00068	DD-681	BYA10T68	B-368	5GA-T68	
C78	680			BPD-00068	DD-681	BYA10T68	B-368	5GA-T68	
C79	1500	1400	215V20LA52	HVD-15-1500	DD30-152	HVC15D15	2HV-215	20GA-D15S *	②
C80	1500	1400	215V20LA52	HVD-15-1500	DD30-152	HVC15D15	2HV-215	20GA-D15S *	③
C81	.15	400	210V20LA54	P468N-15		CUB4P15	GEM-4015	4TM-P15	
C82	680	2000	215V300H19	HVD-20-680	DD30-681	HVB20T68	2HV-368	20GA-T68S *	
C83	.01	600		P488N-01	DD-103	CUB4S1	GEM-411	4TM-S1	
C84	.33	200		P288N-33			GEM-2033	2TM-P33S *	
C85	680	2000			DD30-681	HVB20T68	2HV-368	20SKD-T68S *	

* Not normally in distributors stock. Available thru distributor on order to manufacturer.
① Some versions may use 1000mmf in this application.
② Not used in some versions.
③ Some versions may use 27mmf in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	270V038H03	BT-66	A47F-500K	QI3-133X	UT-437	Volume, Tap ⓑ 120K
B	Shaft			Not Req.	K2S-3	Not Req.	Not Req.	
R2A	15K	½	270V032H04	B-20	A47-15K-S	BII-118	TA15L	Contrast
B	Shaft			Not Req.	K2S-3	SK-1	Not Req.	
R3A	100K	½	270V033H02	B-40	A47-100K-S	QII-128	TA15L	Tone, Note 1
B	Shaft			Not Req.	K2S-3	Not Req.	Not Req.	
R4A	10K	½	270V034H03		A47-10K-Z		U18	Fine Tuning
B	Shaft				K2S-3		Not Req.	
C	Switch				SWE-21		U8-28	
R5A	100K	½	270V032H02	B-40	A47-100K-S	QII-128	TA15L	Brightness
B	Shaft			Not Req.	K2S-3	Not Req.	Not Req.	
R6A	2meg	½	270V032H08	B-75	A47-2meg-S	QII-139	TA25L	Vertical Hold
B	Shaft			Not Req.	K2S-3	Not Req.	Not Req.	
R7A	50K	½	270V033H01	B-35	A47-75K-S	QII-125		Horiz. Hold
B	Shaft			Not Req.	K2S-3	Not Req.		
R8A	500K	½	270V033H04	B-59	A47-500K-S	BII-133	SU-50	Auto Fine Tuning
B	Shaft			Not Req.	FK3-1/4	TM-1	Not Req.	
R9A	5meg	½	270V035H02					Sync Height
B	5meg	½	270V035H03					Vert. Linearity
R10A	500K	½						Quieting
B	500Ω	½						

Note 1. Some versions may use 50K in this application with same part number.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	AIRLINE PART No.	NOTES
R11	680Ω			Note 1
R12	56Ω			
R13	100K			
R14	15meg 5%		250V211A56	
R15	1.5meg 5%		250V211A55	
R16	560K 5%		250V215A64	
R17	12K			
R18	3900Ω			
R19	6800Ω			
R20	47Ω			
R21	470Ω			
R22	8200Ω			
R23	100K 5%			
R24	6800Ω			
R25	470Ω			
R26	47Ω			
R27	470Ω			
R28	150Ω			
R29	15K			
R30	330K			Note 2
R31	270K			Note 2
R32	3300Ω			
R33	10K			
R34	22Ω			Note 2
R35	18K			
R36	18K	1		
R37	27K	2		
R38	3300Ω	2		
R39	3900Ω	2		
R40	150K			
R41	1000Ω			
R42	1meg			
R43	2.2meg			Note 2
R44	150K			
R45	22K 5%		250V212A23	
R46	68K 5%		250V216A63	
R47	330K 5%		250V213A34	
R48	56K 5%	1	250V315A63	
R49	10meg			
R50	68K			
R51	100Ω			
R52	10K	1		
R53	680Ω	1		
R54	180Ω			
R55	68Ω			
R56	470Ω			
R57	12K			
R58	1meg			

Note 1. Some versions may use 100Ω or 330Ω in this application.

ITEM No.	RATING OHMS	RATING WATT	AIRLINE PART No.	NOTES
R59	22K	2		
R60	330Ω	1		
R61	100K			
R62	270K			
R63	1meg			
R64	6800Ω			
R65	22K			
R66	39K			
R67	10K	2		
R68	68K			
R69	82K			
R70	22K			
R71	100K			
R72	2.2meg	1		
R73	150K			
R74	150Ω			
R75	1meg			
R76	22Ω			
R77	560Ω			
R78	560Ω			
R79	820K			
R80	1meg			
R81	8200Ω			
R82	8200Ω			
R83	680K			
R84	47K			
R85	56K	1		
R86	82K			
R87	56K			
R88	180K			
R89	1000Ω			
R90	150Ω			
R91	470K			
R92	560Ω			
R93	12K	7	251V020H13	
R94	1000Ω			
R95	680K			
R96	4.7Ω			
R97	100K	1		
R98	4700Ω	1		
R99	270Ω	1		
R100	1500Ω	20	251V017H11	
R101	820Ω	4	251V020H10	
R102A	14Ω			
B	14Ω	25	251V022H01	
C	15Ω			
R103	7.5Ω		259V002H02	
R104	100Ω	1		

Note 2. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA AIRLINE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	47.25MC Trap	230V042H01					Note 1
L2A	1st Video IF	235V021H01					
B	40.8MC Trap						
L3	2nd Video IF	235V020H01					
L4	47.25MC Trap	230V030H01					
L5	3rd Video IF	235V020H01					Note 2
L6	4th Video IF	235V005H01					100 Microhenries
L7	Series Peaking Coil	230V034H02	19-3100	TV-194	6113	VP-3	500 Microhenries
L8	Shunt Peaking Coil	230V034H04	19-3500	TV-188	6174	VP-8	
L9	4.5MC Trap	230V030H02					300 Microhenries
L10	Series Peaking Coil	230V034H06	19-4301	TV-197	6184		500 Microhenries
L11	Shunt Peaking Coil	230V034H04	19-3500	TV-188	6174	VP-8	14 Microhenries
L12	RF Choke	230V019H10	19-1006				14 Microhenries
L13	Cathode Choke	230V019H10	19-1006				
L14	1st Sound IF	230V030H02					14 Microhenries, Note 3
L15	RF Choke	230V019H10	19-1006				
L16	2nd Sound IF	230V033H01					14 Microhenries
L17	RF Choke	230V019H10	19-1006				
L18	Quadrature Coil	230V031H01					14 Microhenries
L19	RF Choke	230V019H10	19-1006				14 Microhenries
L20	RF Choke	230V019H10	19-1006				

Note 1. Models with suffix B, C and D use Part #230V058H01 in this application.
Note 2. Models with suffix B, C and D use Part #235V005H02 in this application.
Note 3. Not used in some versions.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIRLINE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L21	108Ω		230V032H01						Horiz. Freq. Coil

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE @ CURRENT 1000 ~(1)	REPLACEMENT DATA AIRLINE PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No.	Thordarson PART No	Triad PART No
L22	220A	17Ω	.5 Hy.	430V032H01①	C5040	C-2994		C-2327	26C41	C-27X

① Models with suffix B, C and D use Part #430V064H01.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No	Triad PART No
T1	Vert. Output	430V039H01	Z1900 ①				A-8142 ②		A-108X
T2	Yoke-Horiz. (19.6MH) (110°)-Vert.(32MH) Rear Cover & Centering Device	490V006H01						Y-53 ③	
	Yoke Clamp	78V101H01							
T3	Horiz. Output	788V014H03						FLY-96 *	
		493V003H05							

① Use 8 : 1 turns ratio.
② Drill new mounting hole(s).
③ Use original rear cover and centering device.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
6						6	
5						4	
4						4	
T						T	
3						3	
2						2	
1						1	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	7500Ω	3-4Ω	430V038H01	Z1113	A-3931		A-3878	24S52	S-7X	① Alternate part number.
	7500Ω	3-4Ω	430V045H01 ①	Z1115	A-3930	AU-604	A-3823	26S48	S-92	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA AIRLINE PART No.	QUAM PART No.	NOTES
SP1	5"	PM	6-8Ω	570V028H01①②	5AL2T ①	① Parallel and phase.
SP2	5"	PM	6-8Ω	570V028H01①③	5AL2T ①	② Used in Models GTM-4044A, B, C, D, GTM-4064A, B, C, D, GTM-4144A, B, C, D, GTM-4544A, B, C, D
	8"	PM		570V009H01 ①		③ Used in Models GTM-5044A, B, C, D, GTM-5064A, B, C, D, GTM-5144A, B, C, D, GTM-5154A, B, C, D
	3½"	PM		570V027H01 ③		

AIRLINE MODELS GTM-4044A, B, C, D, GTM-4054A, B, C, D, GTM-4144A, B, C, D, GTM-4154A, B, C, D, GTM-5044A, B, C, D, GTM-5054A, B, C, D, GTM-5144A, B, C, D, GTM-5154A, B, C, D, GTM-8118-1, -1B

FOLDER 1

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AIRLINE PART No.	REPLACEMENT DATA	
K1	Sync Coupling	330mmf, 220K	219V004H02	Centralab Sprague	RC-431 PRC-2
K2	Vertical Integrator	2000mmf, 5000mmf, 5000mmf, 22K, 8200Ω, 8200Ω	219V003H01	Aerovox Centralab Cornell-Dubilier Sprague	PA-501 PC-104 115TM1 V1/V3
K3	Line Filter	1000mmf, 330K	219V004H03		

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	AIRLINE PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.335A	295V006H01 ①	HF504 ①	1N1008 ②	SD-500 ①	M500 ①	① Silicon Type.
M2	.335A	295V006H01 ①	HF504 ①	1N1008 ②	SD-500 ①	M500 ①	② Germanium Type.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		AIRLINE PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N295 *	V-10916-3	1N64	1N295	Video Detector (Pigtail) * Some versions may use 1N64G in this application.

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M4	Lamp	756V501H02	#1847
M5	Tuner	470V019H04	VHF
	Tuner	470V019H05	VHF, with UHF provisions
	Tuner	470V021H05	VHF, with UHF provisions
	Tuner	472V024H03	UHF
M6	Switch	756V020H02	Power-On-Off, SPST (Push, Spring Return Type)
M7	Switch	756V013H03	Channel Selector (Leaf Type)
M8	Switch	756V014H01	Local-Fringe, SPDT (Leaf Type)
M9	Motor	787V052H01	Drive Assembly, Complete
	Printed Board	350V027H01-E	

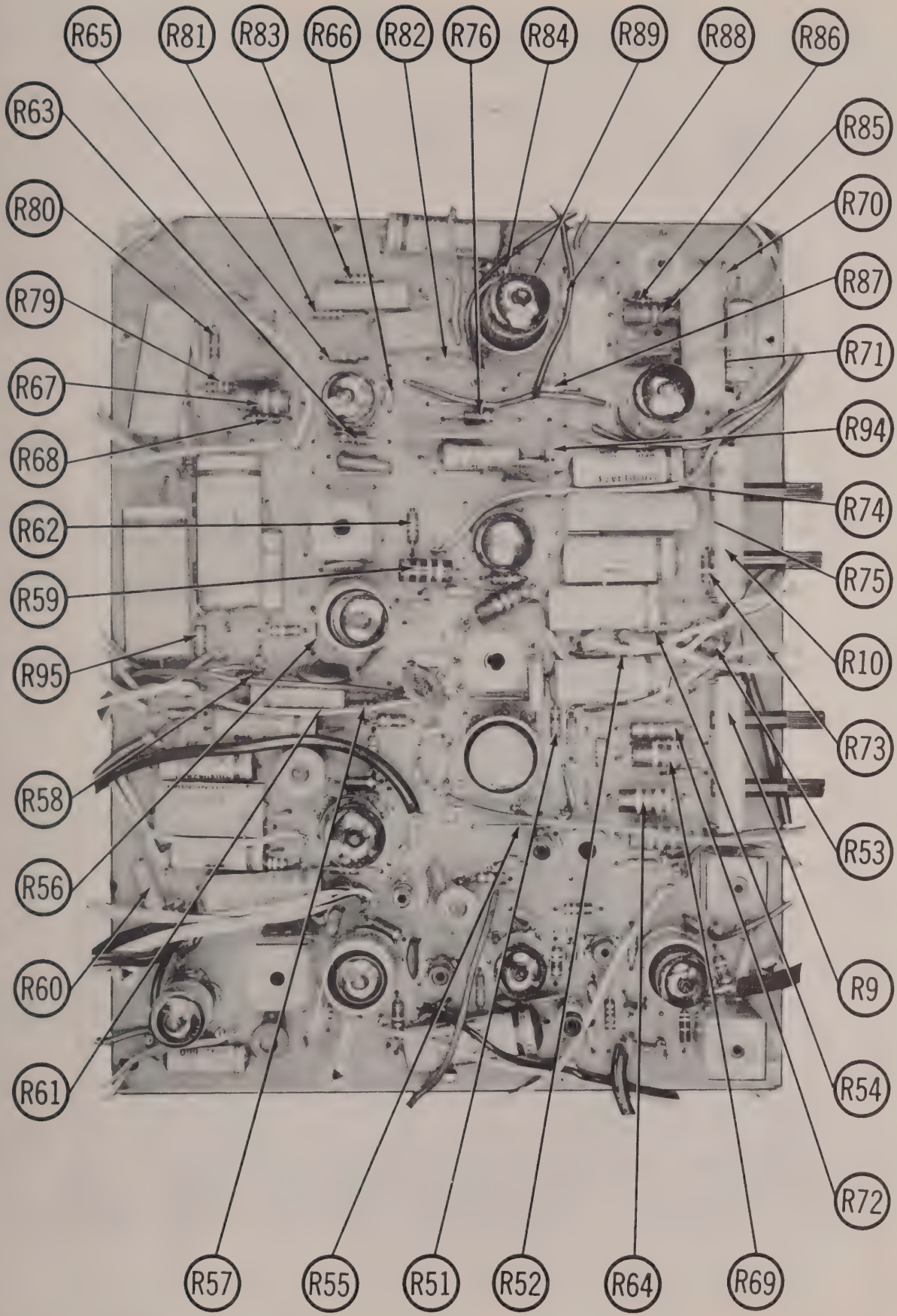
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

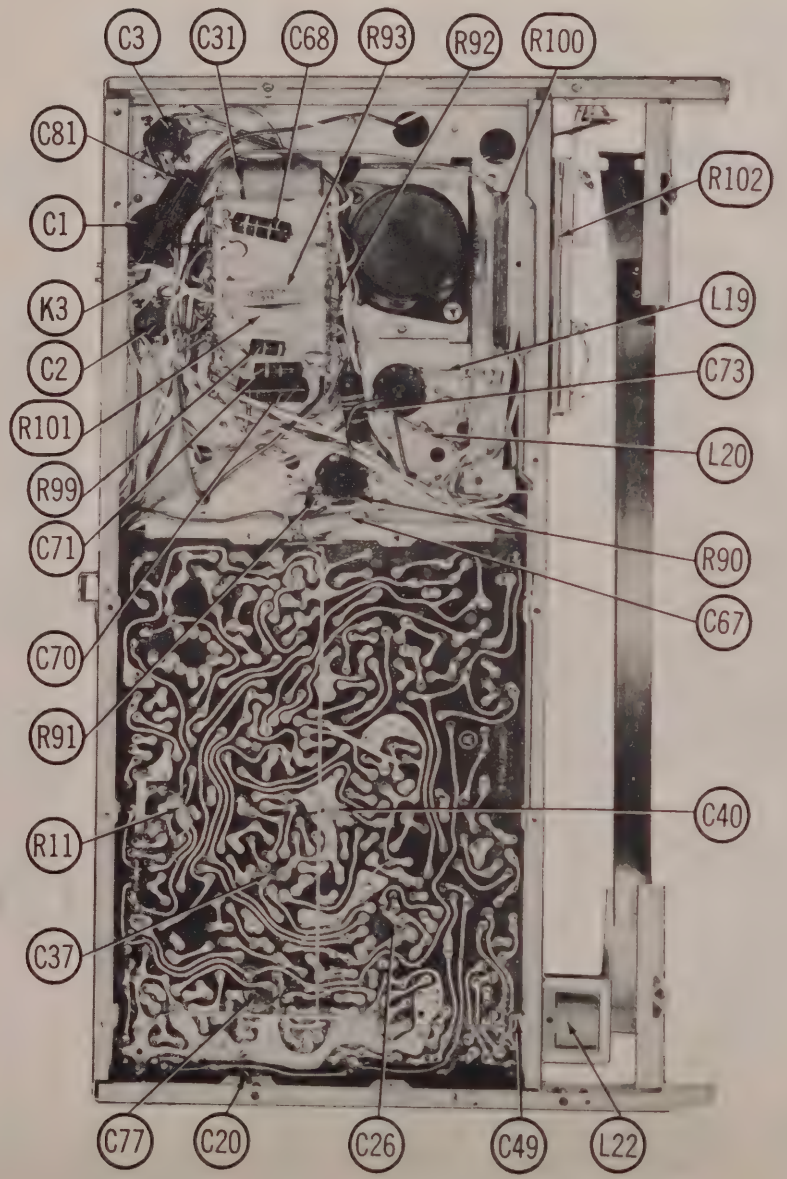
NAME	PART NO.	DESCRIPTION
Safety Glass	630V008H02	
Mask	610V010H02	
Knob	550V050H01	UHF Channel Selector
Knob	550V044H03	Fine Tuning
Knob	550V044H01	Volume, Brightness, Contrast, Vert., Horiz. Hold, Tone
Dial	550V029H04	UHF
Lever	770V404H02	Push Bar
Push Bar	558V096H01	Power-On-Off, Channel Selector

WIRING DATA

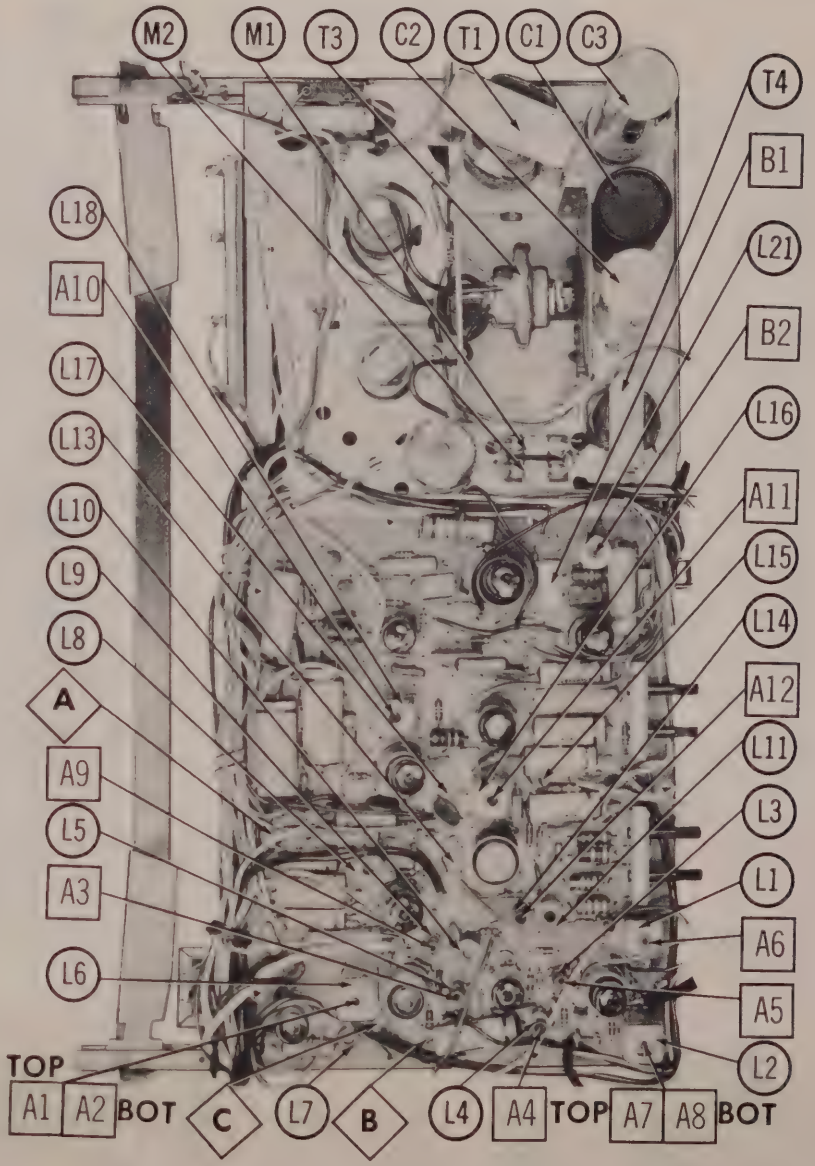
High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



PRINTED BOARD - RESISTOR IDENTIFICATION (R51-R95)



CHASSIS - BOTTOM VIEW



CHASSIS - TOP VIEW

ALIGNMENT INSTRUCTIONS (cont)

SOUND IF ALIGNMENT

Set Auto Fine Tuning to manual.
Pre-set Quieting control to mid-range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	.001mfd	High side to point Ⓒ. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	Across Volume control	A10	Adjust for maximum deflection using a strong signal.
14.	"	"	"	"	"	A11, A12	Reduce generator output to the lowest level that will produce an indication. Adjust for maximum deflection.
15.	"	"	4.5MC (400∿ AM 30% Mod)	"	"	R10	Increase generator output and adjust R10 for MINIMUM modulation indication.

ALTERNATE SOUND IF ALIGNMENT USING AIR SIGNAL

13. Tune in a TV station and connect an attenuator between the antenna and receiver to vary the signal from weak to strong. Set the Quieting control to mid-range. (For location, see tube placement chart.) Apply a strong signal and adjust A10 for maximum sound. If two peaks occur on settings widely separated, use setting farthest counterclockwise. If two peaks are close together increase signal. Apply a weak signal so noise is heard and adjust A11 and A12 for maximum undistorted sound. Use farthest counterclockwise setting if two peaks occur. Apply a strong signal and adjust Quieting control for MINIMUM. DO NOT leave control at maximum counterclockwise position.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGES 6 & 7

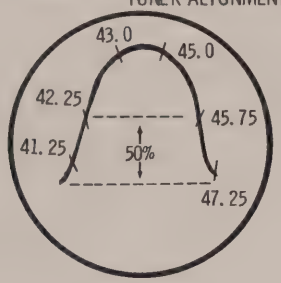


FIG.1

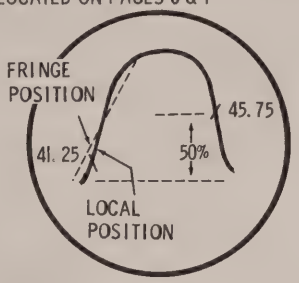
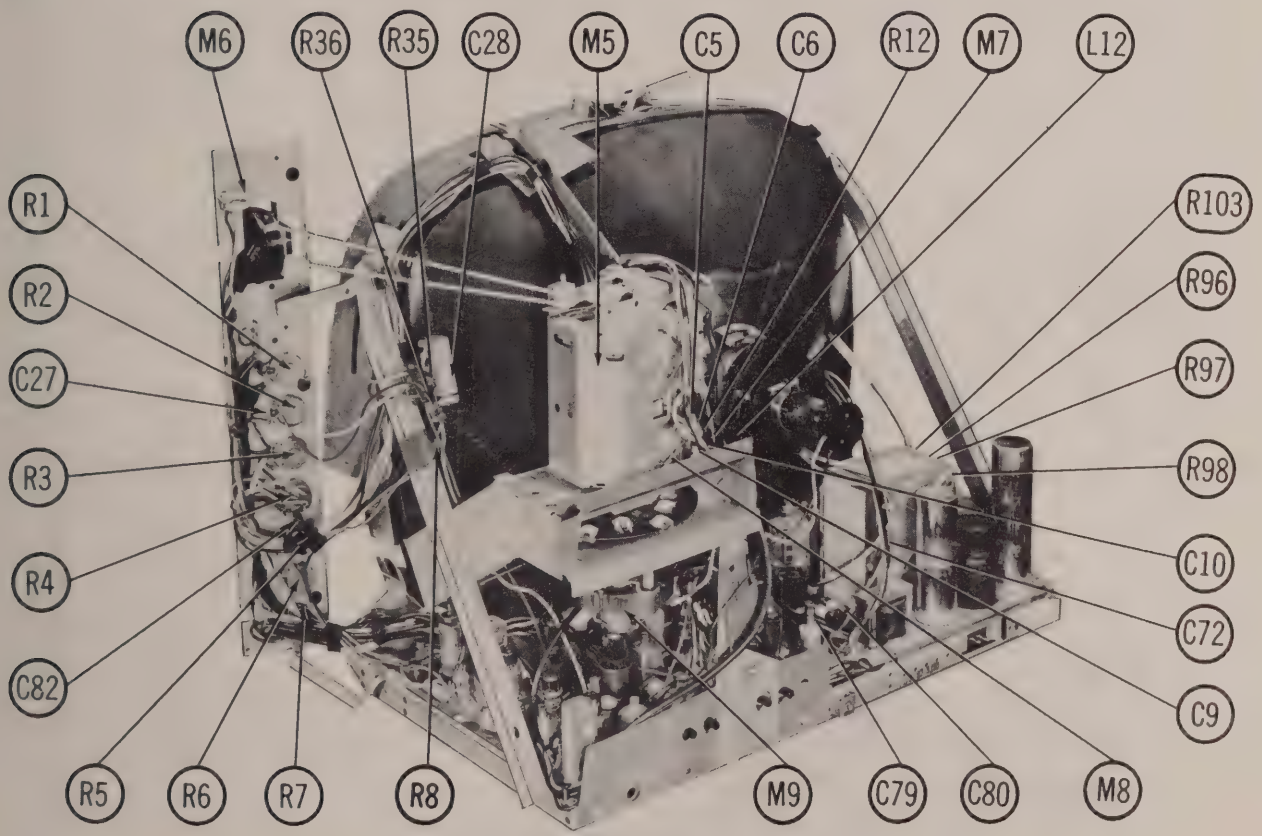
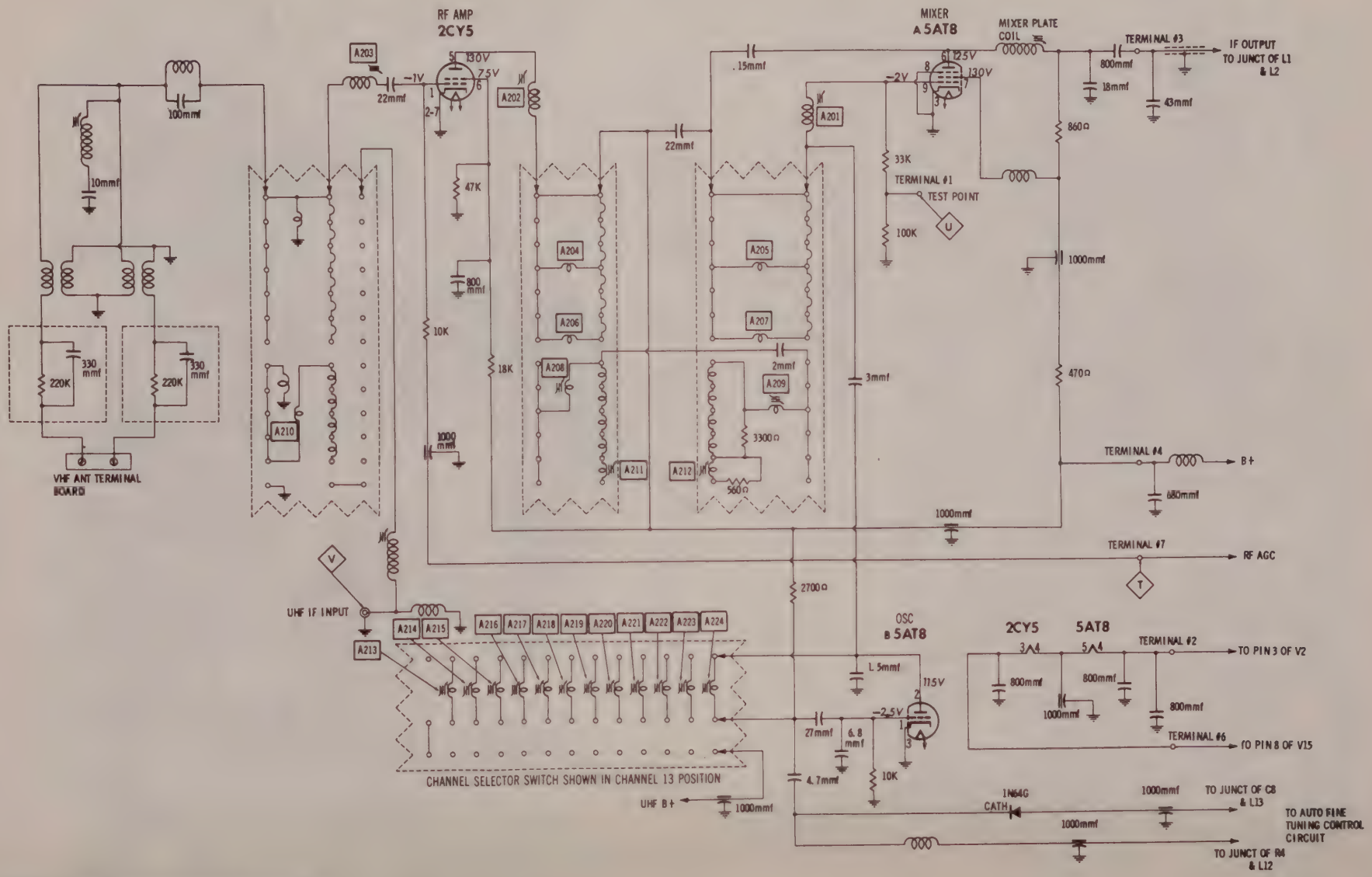


FIG.2



CHASSIS—REAR VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

VHF TUNER WITH UHF PROVISIONS 470V021H05

TUNER PARTS LIST AND DESCRIPTIONS

470V019H04

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	2BN4	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5CG8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C201	120		13L8DB121K		DTZ-120		CNO-312	5GA-T12S 5% *	5%
C202	30		13M320EA300J-05						5%
C203	28		13R005						10%
C204	12		13R003						10%
C205	800		13M320EA801Z-04	EF-001	MFT-1000			503C-D1	
C206	5-10		31T3149-02		829-10		ST-553-Z		
C207	47		13M130V470J						5%
C208	1-4.5		31B-902-07		829-6		CT-551		
C209	30		13M320EA300M-06						
C210	47		13R-008						10%
C211	1-4.5		31B902-07		829-6		CT-551		
C212	12		13L8X102						
C213	5		13X-004						N2200
C214	800		13M320EA801Z-04	EF-001	MFT-1000			503C-D1	
C215	1.5		13L8U1R5C						N750 ±.25mmf
C216	800		13M320EA801Z-04	EF-001	MFT-1000			503C-D1	
C217	5		13X-004						N2200
C218	1		130-111-2	NPO-SI 1	TCZ-1				10%
C219	1000		13R-024	BPD-001	DD-102	BYA6D1	B-210	5HK-D1	
C220	800		13M320EA801Z-04	EF-001	MFT-1000			503C-D1	
C221	800		13M320EA801Z-04	EF-001	MFT-1000			503C-D1	
C222	800		13M320EA801Z-04	EF-001	MFT-1000			503C-D1	
C223	800		13M320EA801Z-04	EF-001	MFT-1000			503C-D1	
C224	800		13M320EA801Z-04	EF-001	MFT-1000			503C-D1	

NOTE: Part numbers listed above are "Standard Coil" part numbers.
* Not normally in distributors stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	PART No.	NOTES
R201	4700Ω			
R202	1000Ω			
R203	3900Ω			
R204	220K			

ITEM No.	RATING OHMS	RATING WATT	PART No.	NOTES
R205	2700Ω			
R206	3900Ω			
R207	1000Ω			
R208	10K			

COILS (RF-IF)

ITEM No.	USE	PART No.	NOTES
L201	Ant. Trans.	31T2107-01	
L202	Ant. Coil	34A-748	
L203	IF Trap Coil	31T2109	
L204A	Ant., RF, Mixer Grid & Osc. Coils	31M-300-2N4A	Channel 2
B	"	31M-300-3N4A	Channel 3
C	"	31M-300-4N4A	Channel 4
D	"	31M-300-5N4A	Channel 5
E	"	31M-300-6N4A	Channel 6
F	"	31M-300-7N4A	Channel 7
G	"	31M-300-8N4A	Channel 8

ITEM No.	USE	PART No.	NOTES
L204H	Ant., RF, Mixer Grid & Osc. Coils	31M-300-9N4A	Channel 9
I	"	31M-300-10N4A	Channel 10
J	"	31M-300-11N4A	Channel 11
K	"	31M-300-12N4A	Channel 12
L	"	31M-300-13N4A	Channel 13
L205	RF Choke	25A-176-01	
L206	RF Choke	34A-680-01	
L207	RF Choke	34A-680-01	
L208	Mixer Plate Coil	31U573-02	

NOTE: Part numbers listed above are "Standard Coil" part numbers.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA
K201	Antenna Isolation	330K, 220mmf	13P-198	
K202	Antenna Isolation	330K, 220mmf	13P-198	

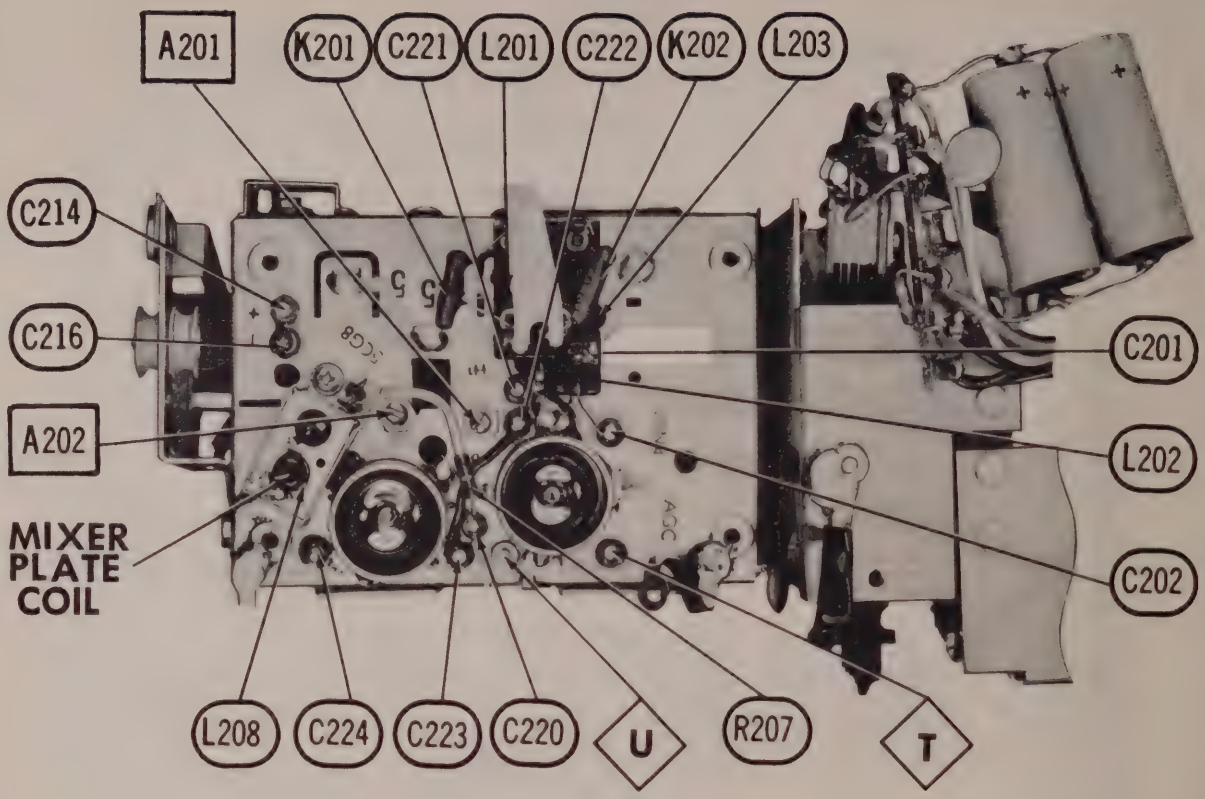
NOTE: Part numbers listed above are "Standard Coil" part numbers.

CRYSTAL DIODES

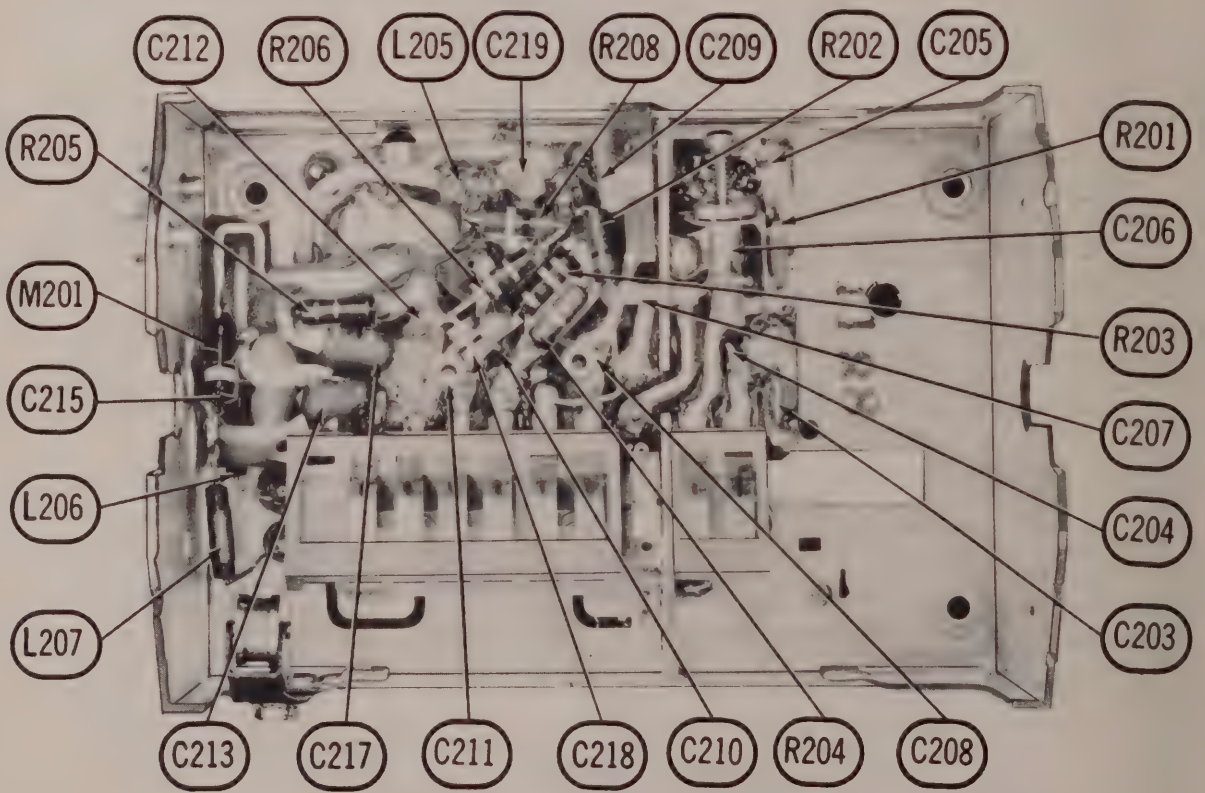
ITEM No.	ORIG. TYPE	REPLACEMENT DATA PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M201	1N87G		1N60	1N60	Automatic Fine Tuning (Pigtail)

AIRLINE MODELS GTM-4044A, B, C, D, GTM-4054A, B, C, D, GTM-4144A, B, C, D, GTM-4154A, B, C, D, GTM-5044A, B, C, D, GTM-5054A, B, C, D, GTM-5144A, B, C, D, GTM-5154A, B, C, D, GTM-8118-1, -1B

FOLDER 1



TUNER 470V019H04 - TOP VIEW



TUNER 470V019H04 - BOTTOM VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AU8	●†6200Ω	†2200Ω	†2200Ω	13Ω	11.5Ω	68Ω	●670K	†2200Ω	†2200Ω
V2	3BZ6	100K	47Ω	5.5Ω	6.5Ω	†2100Ω	†2100Ω	0Ω		
V3	3BZ6	100K	47Ω	6.5Ω	7.5Ω	†2100Ω	†2100Ω	0Ω		
V4	3DK6	.1Ω	150Ω	7.5Ω	8.5Ω	†2100Ω	†2100Ω	0Ω		
V5	6AU8	0Ω	●2.2meg	●ǂ4.5meg	11.5Ω	10Ω	22Ω	170K	†1550Ω	†5100Ω
V6	5BT8	1.8meg	0Ω	820K	15Ω	14Ω	660K	†17Ω	†73K	†18K
V7	3BN6	●550Ω	1Ω	13Ω	14Ω	†22K	7.5Ω	ǂ1meg		
V8	6AQ5A	0Ω	330Ω	10Ω	8.5Ω	†1100Ω	†820Ω	0Ω		
V9	3CS6	90K	0Ω	16Ω	15Ω	†40K	†11K	1meg		
V10	5CZ5	†290Ω	NC	●1.5meg	16Ω	17Ω	●1.5meg	22Ω	NC	†500Ω
V11	6CG7	†57K	●200K	1000Ω	2Ω	0Ω	†57K	2.5meg	1000Ω	0Ω
V12	12DQ6A	NC	20Ω	NC	†12K	470K	TP	17Ω	0Ω	TOP CAP ǂ13Ω
V13	12D4	NC	NC	¶6meg	NC	†18Ω	NC	23Ω	20Ω	
V14	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ǂ628Ω
V15	21CEP4	2Ω	150K	ǂ3.2meg	†1650Ω	NC	150K	●190K	3.5Ω	
V201	2BN4	0Ω	2.5meg	3.5Ω	4Ω	†2500Ω	0Ω	2.5meg		
V202	5CG8	2700Ω	†5400Ω	0Ω	5.5Ω	4Ω	†2500Ω	†11K	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

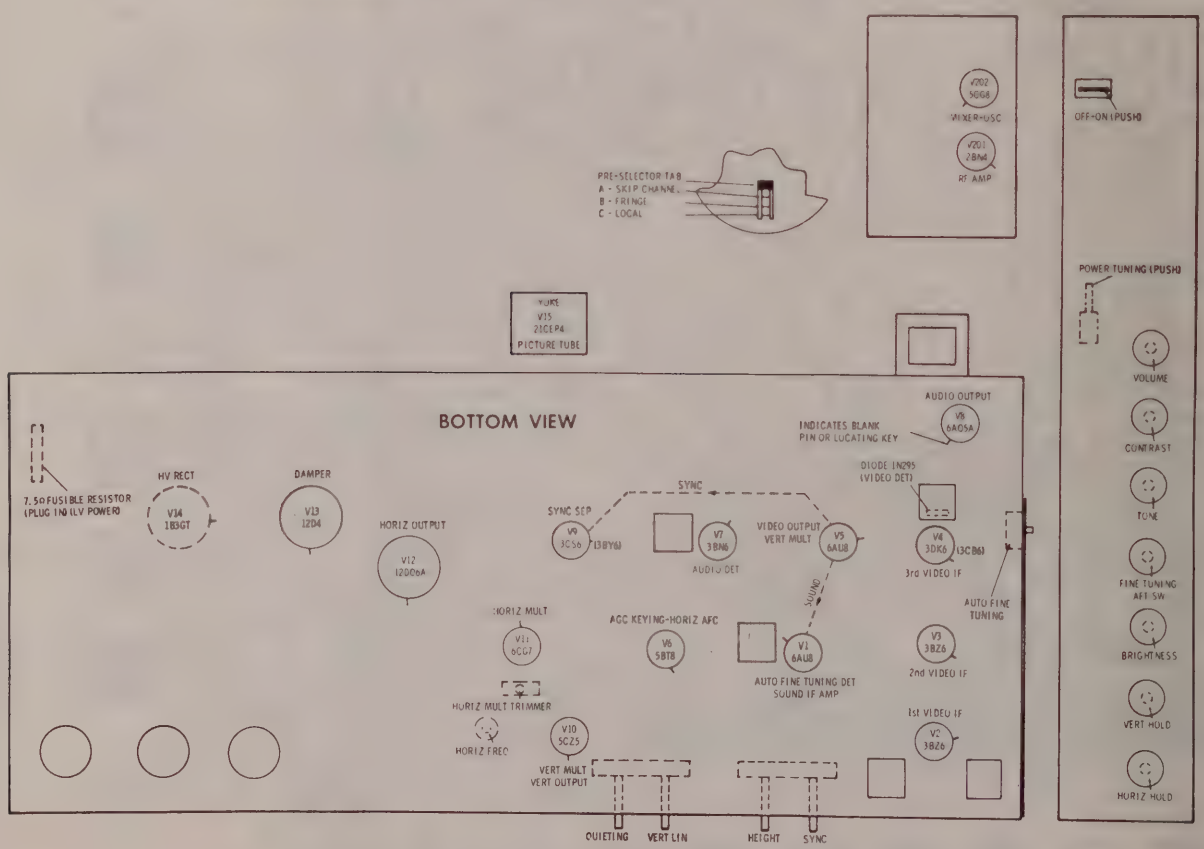
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

† MEASURED FROM 275V SOURCE.

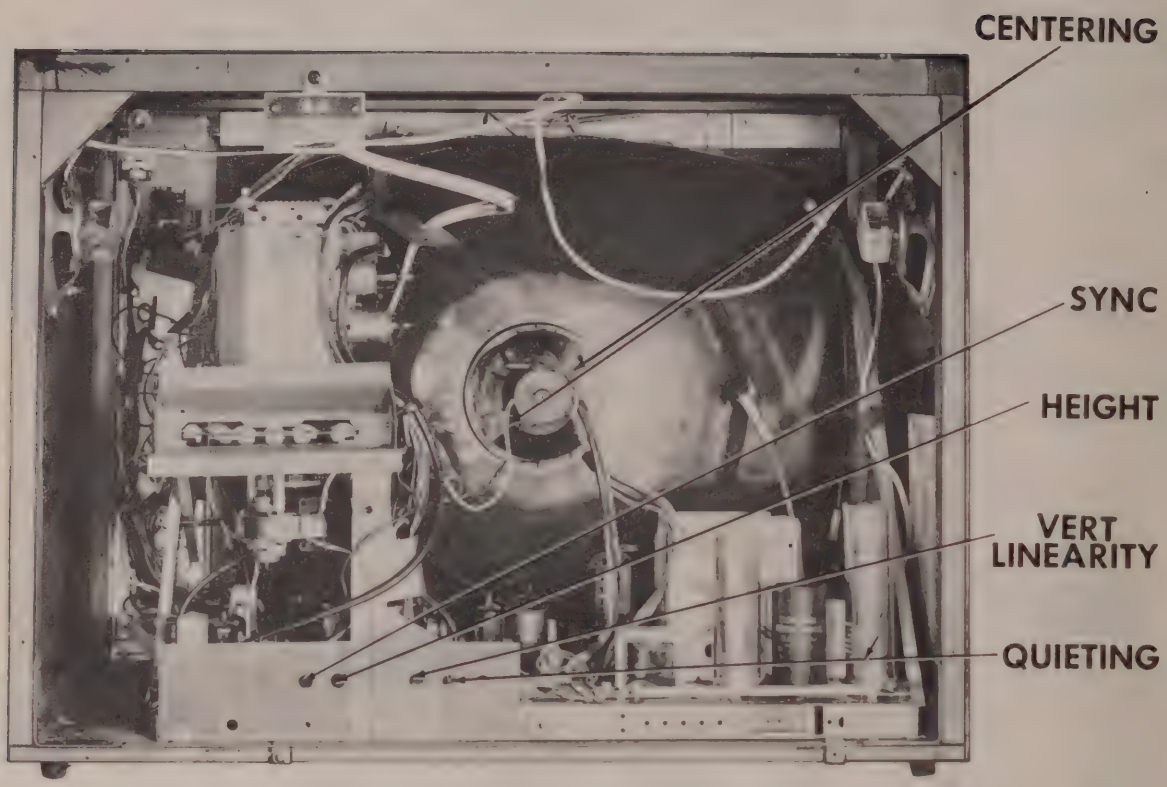
ǂ MEASURED FROM PIN 3 OF V13.

NC NO CONNECTION

TP TIE POINT



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Connect a clip lead across the Horizontal Frequency coil (L21). This may be done from the top of the chassis.

Set the Horizontal Hold (R9) to the center of its range.

Connect the DC probe of the VTVM to pin 7 (grid) of the Horizontal Multivibrator (V11). Common to chassis.

With the receiver tuned to a TV signal, Adjust the Horizontal Multivibrator Trimmer (B1) for zero reading on the VTVM. If zero can be approached, but not quite reached at one extreme of B1, it may be necessary to set the Horizontal Hold SLIGHTLY to one side of mid-range to obtain zero reading on the VTVM.

Remove the clip lead from L21.

Adjust the Horizontal Frequency slug (B2) for zero reading on the VTVM and check the adjustment by switching off channel and back again. The receiver should pull into synchronization on all channel. If not, repeat adjustments

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

RCA VICTOR CHASSIS CTC7AA, AB, AC, AD, AE, AF, AH, AJ, AK, AL, AM, AN, CRK1A, CTP6A, KRK83B, KRK84A

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MODEL 21CD8914M (CH. CTC7AC)

RCA VICTOR CHASSIS CTC7AA, AB, AC, AD, AE, AF, AH, AJ, AK, AL, AM, AN, CRK1A, CTP6A, KRK83B, KRK84A

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

PHOTOFACT* Folder

with CIRCUITRACE*

MODEL 21CD8914M (CH. CTC7AC)

TRADE NAME	RCA Victor	MODELS	CHASSIS
		21CD8725M, 21CD8727M, 21CD8776M, 21CD8777M, 21CT8712M	CTC7AA
		21CD8725MU, 21CD8727MU, 21CT8712MU	CTC7AB
		21CD8865M, 21CD8866M, 21CD8867M, 21CD8906M, 21CD8907M, 21CD8910M, 21CD8914M	CTC7AC
		21CD8865MU, 21CD8866MU, 21CD8867MU, 21CD8906MU, 21CD8907MU, 21CD8910MU, 21CD8914MU	CTC7AD
		21RC8975, 21RC8977	CTC7AE
		21RC8975U, 21RC8977U	CTC7AF
		21RC8985, 21RC8987	CTC7AH
		21RC8985U, 21RC8987U	CTC7AJ
		21CD8845M, 21CD8846M, 21CD8847M	CTC7AK
		21CD8845MU, 21CD8846MU, 21CD8847MU	CTC7AL
		21RC8995, 21RC8996	CTC7AM
		21RC8995U, 21RC8996U	CTC7AN
		21RC8995, U, 21RC8996, U ..... Remote Control CRK1A,	CTP6A
		21RC8975, U, 21RC8977, U, 21RC8985, U, 21RC8987, U ..... Remote Control KRK83B,	KRK84A
MANUFACTURER	Radio Corporation of America, RCA Victor Tele. Div., Camden 8, New Jersey		
TUBES	TV: VHF - Twenty-six , UHF - Twenty-seven Remote Receiver: CTP6A - Nine Remote Receiver : KRK83B - Eight	Remote Transmitter: CRK1A - One Transistor Remote Transmitter: KRK84A - Three Transistors	
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING	TV: 355 Watts, 3.8 Amp. @ 117 Volts AC Remote Receiver CTP6A: 43 Watts, .4 Amp. @ 117 Volts AC Remote Receiver KRK83B: 48 Watts, .47 Amp. @ 117 Volts AC Remote Transmitter CRK1A: .013 Amp. @ 6.5 Volts DC Remote Transmitter KRK84A: .195 Amp. @ 9 Volts DC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC , Sound IF 41.25MC (Intercarrier)		

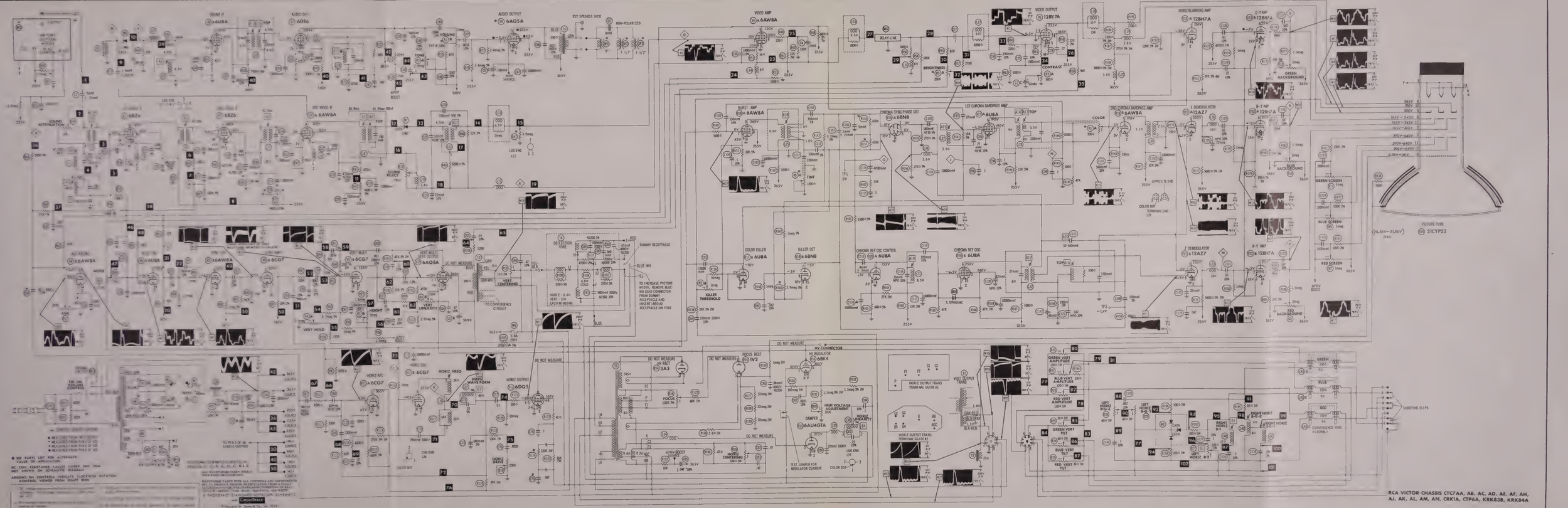
RCA VICTOR CHASSIS CTC7AA, AB, AC, AD, AE, AF, AH, AJ, AK, AL, AM, AN, CRK1A, CTP6A, KRK83B, KRK84A

SET 433 FOLDER 2

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H924, J127



RCA VICTOR CHASSIS CTC7AA, AB, AC, AD, AE, AF, AH, AJ, AK, AL, AM, AN, CRK1A, CTP6A, KRK83B, KRK84A

BLOCK DIAGRAM

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A1 thru A19..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A20..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

VIDEO IF ALIGNMENT

Connect the negative lead of a 6 volt bias supply to point (A). Positive to chassis.
Connect the negative lead of a 15 volt bias supply to point (B). Positive to chassis.
Connect the negative lead of a 7 volt bias supply to point (C). Positive to chassis.
Connect negative lead of a 7 volt bias supply to pin 2 of V23. Positive to chassis.
Connect a clip lead from point E to chassis. Preset Sound Reject (R16) at 75% clockwise rotation. Preset Sound Attenuation (R18) at 50% rotation. Video IF shield must be in place during alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	43.8MC (Unmod)	4	DC probe thru 10K to point (D). Common to chassis. Use negative scale.	A1	Adjust for maximum deflection. Use peak with core nearest printed board end of coil. Maintain VTVM reading of 1.5 volts by adjusting signal generator output.
2.	"	"	42.5MC	"	"	A2	"
3.	"	"	45.75MC	"	"	A3	"
4.	"	"	44.0MC	"	"	A4	"
5.	"	"	"	"	"	Mixer Plate Coil	Adjust for maximum deflection with peak at top end of coil.
6.	"	"	41.25MC	"	"	A5, R16	Adjust A5 and Sound Reject (R16) simultaneously for MINIMUM deflection with slug away from chassis. Reduce bias at point (A) if necessary for sufficient indication.
7.	"	"	47.25MC	"	"	A6, R18	Adjust A6 and Sound Attenuation (R18) simultaneously for MINIMUM deflection with slug away from chassis.
8.	"		41.25MC	"	DC probe thru 10K to point (F). Common to chassis.	A7	Increase bias at point (A) to -6 volts. Adjust A7 for MINIMUM deflection with slug away from chassis.

OVERALL VIDEO IF RESPONSE CHECK

Connect bias as under "Video IF Alignment".
Connect a .001mfd capacitor in series with a 180Ω resistor from pin 5 (plate) of 6BZ6 (V2) to chassis with the resistor next to chassis.
Connect a 1000mmf capacitor across the scope leads.
The Video IF shield must be in place during alignment.
Connect the DC probe of the VTVM to point (B). Common to chassis. (Use negative scale.)
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	45MC	42.17MC 45.75MC	4	Vert. Amp. thru demodulator probe (Fig. 1) to pin 5 (plate) of 6BZ6 (V1). Low side to chassis.		Set sweep output for .1 volt peak to peak on scope. Retouch Mixer Plate Coil and A4 for maximum gain and symmetry of response similar to Fig. 2. Reduce bias to -4 volts at point (A) if necessary.
10.	"	"	"	41.25MC	"	"		Reduce bias at point (A) to zero. Retouch A7 to place marker in trap notch as in Fig. 2.
11.	"	"	"	47.25MC	"	"		Retouch A6 and R18 to place marker in trap notch as in Fig. 2. Remove capacitor and resistor load from 6BZ6 (V2). Increase bias at point (A) to -6 volts. Remove .001 mfd and 180Ω from pin 5 of V2.
12.	"	"	"	41.65MC 42.17MC 42.75MC 45.0MC 45.75MC	"	Vert. Amp. thru 10K to point (D). Low side to chassis.		Use 3 volts peak to peak on scope. Retouch A1, A2 and A3 for response similar to Fig. 3 with markers as shown. A1 controls tilt, A2 affects 42.17MC side of curve and A3 affects 45.75MC side. Connect a .001mfd capacitor from point (G) to chassis.
13.	"	"	"	41.25MC	"	"		Retouch A5 and R16 to place 41.25MC in trap notch if necessary. Remove .001mfd.
14.	Fig. 4	Across VHF antenna terminals thru matching network (Fig. 4).	All VHF channels separately	42.17MC 45.0MC 45.75MC	All VHF channels separately	"		Decrease bias at point (B) to -3 volts. SLIGHTLY retouch A1, A2 and A3 to correct for any overall tilt that is approximately the same on all channels. Repeat step 13.

ALIGNMENT INSTRUCTIONS (cont)

SOUND IF ALIGNMENT

Connect the negative lead of a 10 volt bias supply to point (A). Positive to chassis.
In the following steps, the signal level may be reduced by disconnecting the lead from the terminal at point (F) and connecting a 1meg potentiometer from point (F) to chassis. The lead is then connected to the center arm of the control. This control is then used to control the level of the signal applied to the Sound IF strip. Start alignment with the control turned to maximum signal.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
15.	.001mfd	High side to point (H). Low side to chassis.	4.5MC (Unmod.)	Any non-interfering channel	DC probe thru diode probe (Fig. 5) to pin 1 (grid) of 6DT6 (V7). Common to chassis. Connect scope across voice coil of speaker.	A8	Connect a jumper from pin 7 (grid 3) of V7 to chassis. Adjust for maximum deflection. Set generator output for 1 volt on VTVM. Use peak with slug nearest top of coil form.
16.	"	"	"	"	"	A9, A10	Adjust for maximum deflection. Set generator output for 1 volt on VTVM. Peak with maximum core separation. Repeat step 15 and 16.
17.	Remove the diode probe and jumper. Turn off signal generator and tune in strongest signal in the area. Set volume control for normal volume. Set A11 so that core is flush with top of coil form. Observe scope and listen to sound. Change bias at point (A) to zero. Adjust A11 clockwise to a peak. Continue clockwise to second louder peak and adjust for maximum output at this second peak. Gradually decrease signal until sound becomes distorted. Maintain distorted signal and adjust A9 for maximum output.						

ALTERNATE SOUND IF ALIGNMENT USING FM GENERATOR

Connect the negative lead of a 10 volt bias supply to point (A). Positive to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
15.	.001mfd	High side to point (H). Low side to chassis.	4.5MC (400∿ FM Mod. 15KC Swp)	Any non-interfering channel	DC probe thru diode probe (Fig. 5) to pin 1 (grid) of 6DT6 (V7). Common to chassis.	A8	Connect a jumper from pin 7 (grid 3) of V7 to chassis. Adjust for maximum deflection. Set generator for 1 volt on VTVM. Use peak with slug nearest top of coil form.
16.	"	"	"	"	"	A9, A10	Adjust for maximum deflection. Set generator for 1 volt on VTVM. Remove VTVM, diode probe and jumper.
17.	"	"	"	"	USE SCOPE Across speaker voice coil	A11	Starting with the slug fully counterclockwise adjust to a peak. Continue turning clockwise until a second peak is reached and adjust for maximum at this second peak. Decrease signal until detector breaks out of lock as indicated by jagged portions of the sine wave on the scope. Retouch A9 for symmetrical breakout similar to Fig. 6.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
18.	.001mfd	High side to point (H). Low side to chassis.	4.5MC (400∿ AM)	Any non-interfering channel	USE SCOPE Vert Amp. thru demodulator probe to pin 6 (plate) (V17). Low side to chassis.	A12	Adjust for MINIMUM 400∿ indication on scope.

CHROMA BANDPASS ALIGNMENT

Connect the negative lead of a 7 volt bias supply to point (J). Positive to chassis.
Connect a clip lead from point (E) to chassis.
Turn Color control fully clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19.	.1mfd	High side to pin 2 (grid) of 6U8 (V17). Low side to chassis.	3.58MC (3-5MC Swp)	3.08MC 4.08MC	Any non-interfering channel	Vert. Amp. thru demodulator probe (Fig. 7) to pin 2 (grid) of 12AZ7 (V21). Low side to chassis.	A13, A14	Adjust for response similar to Fig. 8 with equal marker height.
20.	Turn the Brightness, Contrast and Noise controls fully counterclockwise. Connect 330Ω resistor and 4mfd capacitor in series from plate (Pin 6) of 6U8 (V17) to chassis.							
21.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis. Connect high side of separate marker generator to ungrounded tube shield of 1st Chroma Bandpass Amp. (V17). Low side to chassis.	45MC (10MC Swp)	3.08MC 4.08MC	Any non-interfering channel	Vert. Amp. thru demodulator probe (Fig. 7) to pin 2 (grid) of 12AZ7 (V21). Low side to chassis.	A15	Remove clip lead between point (E) and chassis. Adjust A15 for response similar to Fig. 9. Peak with core nearest chassis end of coil form.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGES 36 & 37

continued PAGE 7

MISCELLANEOUS ADJUSTMENTS

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Suggested Alignment Tools:
B3, B4 .....GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

Connect a 0-500MA meter in series with the cathode circuit of the Horizontal Output tube (V12). Connect a .47mfd capacitor across the meter terminals. Connect a 0-1MA meter in series with the cathode circuit of the HV Regulator (V16) by removing the test jumper and connecting the meter in its place. Connect the high side of the scope thru a low capacity probe to point (K). Low side to chassis. Connect the DC probe of the VTVM thru a high voltage probe to the high voltage rectifier "cup". Common to chassis.
Set the focus (R14) fully counterclockwise. Set the Horizontal Drive (R19) to the center of its range. Set the High Voltage Adjust (R20) at two-thirds clockwise rotation.
Tune the receiver to a station signal and synchronize the picture. Adjust the Horizontal Waveform slug (B3) for waveform similar to Fig. 11 with the round and sharp peaks at equal amplitudes. Keep the picture in sync during the adjustment with the Horizontal Hold.
Adjust the Horizontal Linearity slug (B4) for MINIMUM current indication on the 500MA meter.
Adjust the Horizontal Drive (R19) for maximum current without the presence of drive lines in the picture, but not to exceed 180MA.
Adjust the High Voltage Adjust (R20) for 23.5KV on the VTVM. Check the current reading on the meter. It should not exceed .8MA (19 watts).

AGC ADJUSTMENT

Tune in the strongest station in the area. Connect a scope to point (E). Low side to chassis. Adjust the AGC control (R17) for 10 volts peak to peak on the scope.

NOISE INVERTER ADJUSTMENT

Connect the Vert. Amp. of the scope to point (I). Low side to chassis. Turn the Noise control (R6) fully counterclockwise. Turn R6 clockwise and observe the scope, when the tips of the sync appear to be clipped turn counterclockwise until clipping just disappears.

COLOR AFC ALIGNMENT

Connect the Vert. Amp. of the scope to point (M). Low side to chassis.
Connect the DC probe of the VTVM thru a 470K resistor to pin 7 (plate) of the 6BN8 (V19). Common to chassis.
Set the Tint control (R5A) to the center of its range.
Turn the Killer Threshold control (R3B) fully counterclockwise.
Preset A20 one-half turn from tight.
Connect a short clip lead from point (N) to chassis.
Adjust A16 and A17 for maximum deflection on the VTVM. If the Chroma Reference Oscillator is not running, no reading will be obtained. In which case, adjust A19 to start the oscillator and adjust A16 and A17.
Adjust A18 for maximum deflection on VTVM. Make sure oscillator is running and locked in.
Connect a clip lead from point (O) to chassis. Remove the VTVM from V19. Adjust A19 until the color bars stand still on the screen or drift away slowly. Move scope connection to point (P).
Remove the clip lead from point (O). Observe the bar pattern on the scope and retouch A18 if necessary, to obtain proper response curve similar to R-Y signal in Fig. 12 with equal change when rotating the Tint control from one end to the other. After the above adjustment return the Tint control to the nominal setting. Move the scope connection to point (R). If necessary, retouch A16 for correct B-Y signal as shown in Fig. 12.
Connect a clip lead from pin 7 (grid) of the Burst Amplifier (V18) to chassis.
Connect a clip lead from pin 9 (grid) of the Color Killer (V17) to chassis.
Reconnect the clip lead to point (O).
Reconnect the VTVM to pin 7 of V19. Adjust A20 for zero volts on the VTVM. A positive and negative reading will be obtained on either side of the correct reading.
Recheck the setting of A16 by observing the B-Y waveform. Recheck the setting of A20. Check the G-Y waveform by connecting the scope to point (S) and compare to the G-Y waveform in Fig. 12.
Remove all clip leads and test equipment. Switch to an unused channel and adjust the Killer Threshold control to the point where color just disappears from the noise pattern on the screen.

PRELIMINARY CONVERGENCE ADJUSTMENTS

Connect the RF output of a white dot generator to the antenna terminals.
Preset all Red, Green, and Blue Horizontal and Vertical Convergence controls and coils to the center of their ranges.
Adjust the Red, Green, and Blue Convergence Magnets and the Lateral Magnet to produce a white dot in the center of the screen. Keep the receiver in sharp focus while making this adjustment. Switch the generator to standby position.

COLOR PURITY ADJUSTMENTS

If necessary, demagnetize picture tube and associated components.
Set the red tabs of the Purity Magnet together. Set the Edge Purity Magnets so that the two magnets are in the same relative position one above the other.
Loosen the yoke clamp and slide the deflection yoke to the rear as far as possible.
Shunt test points (R) and (S) to chassis thru individual 100K resistors.
Slide the Purity Magnet around the neck of the picture tube and at the same time spread the red tabs apart to produce a uniform red screen area at the center of the screen.
Move the yoke forward and adjust for best overall red screen without neck shadow. Adjust so that any color impurities occur at the extreme edge of the raster.
Adjust the Screen controls for a white raster and adjust the Edge Purity Magnets for best edge purity. Maximum correction is obtained with the open ends of the magnets 180 degrees apart. Rotate both magnets simultaneously to achieve the desired results.

VERTICAL CONVERGENCE ADJUSTMENTS

Recheck the "Preliminary Convergence Adjustments" for correct settings of the Red, Blue, and Green Magnets and Lateral Magnets to produce a white dot in the center of the raster.
Loosen the two screws holding the convergence board, slide the board to the left and remove. Fasten the board to the two screws provided on the top rail of the cabinet with the controls facing forward so that convergence adjustments may be made from the front of the receiver. Slots are provided in the lower edge of the board for making this mounting.
Switch the dot generator to the vertical white bars and adjust the Red and Green Tilt controls for equal displacement of the center bar at the top and bottom. Adjust Red and Green Vertical Amplitude controls until the red and green lines are straight.
Gradually reduce the amplitudes to converge the red, green, and blue along the center lines, retouching the Red and Green Tilt controls to keep the lines parallel. The center lines should converge to produce a white vertical line from top to bottom or should show slight displacement of the red at one side the green at the other with all three lines parallel from top to bottom. Readjust the convergence magnets if necessary to superimpose the three parallel lines to produce a single white line from top to bottom.
Switch the generator to the horizontal bars. Referring to the top and bottom bars as a reference, adjust the Blue Vertical Tilt, and Amplitude controls for equal downward displacement of the blue horizontal from the extreme top and bottom lines at the top center and bottom center of the raster. Reduce the Blue Vertical Amplitude control to converge all lines at the center, retouching the Blue Vertical Tilt SLIGHTLY, if necessary making all white lines at the center from top to bottom.

HORIZONTAL CONVERGENCE ADJUSTMENTS

Switch the generator to crosshatch pattern. If necessary, retouch convergence magnets to produce good convergence at the center of the screen.
Adjust coil B-1 so that the blue horizontal line at the right center of the raster is a straight line.
Adjust control B-2 for a straight blue line to the left side of the raster. If a straight line cannot be obtained, move the clip on the back of the convergence control panel from pin "W" and 4 to 4 and "G".
Adjust R-G-1 to make the vertical lines at the right side of the raster converge. Adjust R-G-2 to make the horizontal red and green lines at the right side of the screen converge. Readjust B-1 to make the blue line at the right center fall on red and green converged lines. Retouch R-G-1 for convergence of vertical lines at the right side.
Adjust control R-G-3 to make vertical lines at the left side converge.
Adjust control R-G-4 to make the red and green horizontal lines at the left side of the screen coverge.
If it was impossible to achieve convergence at the left side with either R-G-3 or R-G-4, move the clip from terminal 8 and "G" to 8 and "W" and move the clip from 12 and "G" to 12 and "W". Now repeat adjustment of R-G-3 and R-G-4 and sufficient range will be obtained to converge in each case.
After readjusting R-G-4, repeat adjustment of R-G-3 to compensate for any interaction. Readjust B-2 to make the blue lines at the left center fall on the converged red and green lines.
The picture or pattern should now show proper convergence over the entire screen.

GRAY SCALE ADJUSTMENT

Set the Screen controls fully clockwise and the Background controls fully counterclockwise. Turn the Brightness and Contrast controls fully counterclockwise after tuning in a station signal. Use a program which displays the full range of contrast from low lights to high lights. Advance the Brightness control to obtain a picture just SLIGHTLY below normal brightness level, the control will usually fall at approximately two-thirds from fully counterclockwise. Be careful not to advance the Brightness to close to overload. If the picture appears to be too dim at the above setting, advance the Contrast control SLIGHTLY.
Adjust Red, Blue, and Green Background controls to produce white in the high light areas of the picture.
One screen control will be left at fully clockwise rotation. Which one will be determined as follows:

1. Yellow in lowlight areas. Blue Screen should remain at maximum.
2. Cyan in lowlight areas. Red Screen should remain at maximum.
3. Magenta in lowlight areas. Green Screen should remain at maximum.
4. Red, green or blue in lowlight areas. This condition indicates that the Screen control of the color appearing is too high and must be reduced from maximum. Turn this Screen control down slowly. One of the following conditions will occur:
   a. If the picture becomes gray the two remaining Screens should remain at maximum setting and the Background control for the Screen turned down should be adjusted (with the Brightness control set for normal brightness) to produce white in the highlight areas. The raster should stay white (track) at all brightness levels. Recheck at low level and if necessary, retouch SLIGHTLY the Screen control that was previously turned down to achieve gray in the lowlight areas. No further adjustments are required and the balance of this procedure does not apply.
   b. Yellow in the lowlight areas. Blue Screen should remain at maximum.
   c. Cyan in lowlight areas. Red Screen should remain at maximum.
   d. Magenta in lowlight areas. Green Screen should remain at maximum.

From this point on do not adjust either the Screen or Background control for the color which remains at maximum position. THIS IS IMPORTANT.
Turn the Brightness to a low level and adjust the two remaining Screen controls to produce a gray picture in the lowlight areas.
Advance the Brightness to normal brightness level and adjust the two remaining Background controls for white in the highlight areas.
Check for proper gray scale at all brightness levels. It may be necessary to retouch SLIGHTLY the two Screen controls at lowlight and the Background controls at highlight, remembering not to adjust either the Screen or Background controls for the color set at maximum.

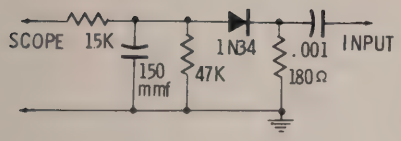


FIG. 1

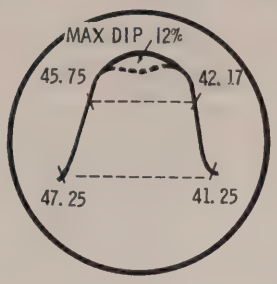


FIG. 2

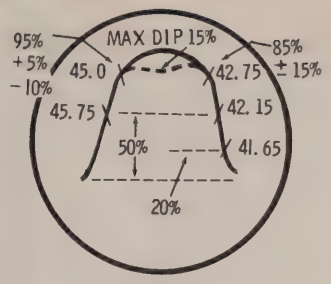


FIG. 3

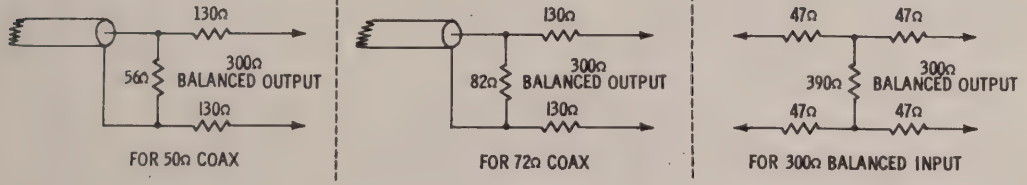


FIG. 4

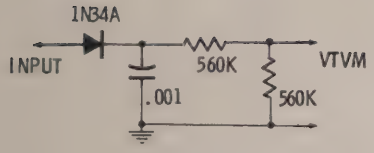


FIG. 5

FIG. 6

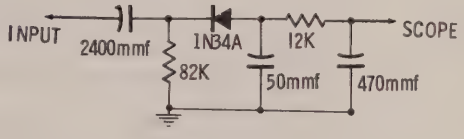


FIG. 7

FIG. 8

FIG. 9

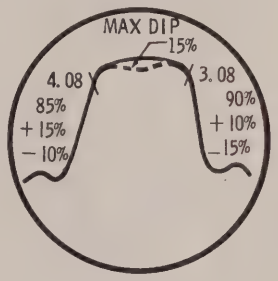


FIG. 10

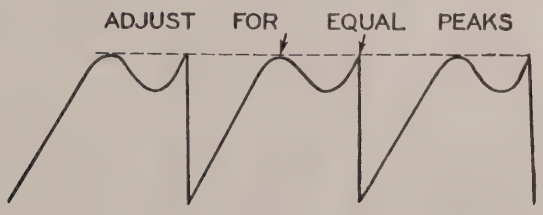


FIG. 11

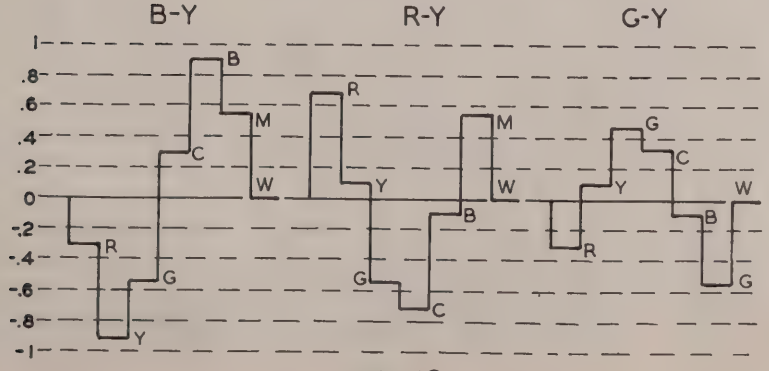


FIG. 12

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st Video IF Amp.	6BZ6	
V2	2nd Video IF Amp.	6BZ6	
V3	3rd Video IF Amp. - Sync Sep.	6AW8A	
V4	Video Amp. -AGC Keying	6AW8A	
V5	Video Output	12BY7A	
V6	Sound IF Amp. -Noise Inv.	6U8A	
V7	Audio Det.	6DT6	
V8	Audio Output	6AQ5A	6DS5 *
V9	Sync Amp. -Vert. Mult.	6CG7	
V10	Vert. Mult. -Vert. Output	6AQ5A	
V11	Horiz. AFC-Horiz. Osc.	6CG7	
V12	Horiz. Output	6DQ5	
V13	Damper	6AU4GTA	
V14	HV Rectifier	3A3	

ITEM No.	USE	TYPE	NOTES
V15	Focus Rectifier	1V2	
V16	HV Regulator	6BK4	
V17	1st Chroma Bandpass Amp. - Color Killer	6U8A	
V18	2nd Chroma Bandpass Amp. - Burst Amp.	6AW8A	
V19	Chroma Sync Phase Det. - Killer Det.	6BN8	
V20	Chroma Ref. Osc. Control - Chroma Ref. Osc.	6U8A	
V21	X Demodulator - Z Demodulator	12AZ7	
V22	R-Y Amp. - B-Y Amp.	12BH7A	
V23	G-Y Amp. -Horiz. Blanking Amp.	12BH7A	

* Alternate.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	RCA Victor PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V24	21CYP22		21CYP22	21CYP22	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	160	250	106364	AFH1-31-75	XA0315	FP131	TMS-34	S-160	TVL-1540
C2A	▲160	250	106363	AFHS3-178-50	D0360	FP368.5		Q-287	TVLS-3711.2*
B	■50	450			BR6045	TC80		MT-25100	
C	▲50	50							
C3A	▲80	450	105219	AFH3-182-80	B0489	FP342.8	TMD-93	T-740	TVLS-3723.7*
B	■50	350			BR10035		TD-100-200	MT-4550	
C	▲100	200							
C4	2	350	78920	PRS450V2	BR245	TT350X2	TD-2-450	MT-4502	TVA-1701
C5	8	10NP	102847	AC-PRS10V8	BBR16-90 † BBR16-90 †	TC108	TD-16-150 † TD-16-150 †	MT-1516 † MT-1516 †	TVAS-1112 *
C145	40	25	105758	PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206

* Not normally in distributors stock. Available thru distributor on order to manufacturer.
† Connect negative leads together.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C7	9		105298					5TCCB-V9S ±.25mmf *	±.25mmf
C8	150		105299		DTZ-150			5GA-T15S 5% *	5%
C9	680		102237						N2200 10%
C10	1000		77252	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C11	1000		77252	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C12	1000		77252	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C13	330		101725						N1500 10%
C14	1000		77252	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C15	1000		77252	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C16	2		106390						N3300 ±.25mmf
C17	1.5		103411		TCZ-1R5		CNO-515	5TCCB-V15S ±.25mmf*	±.25mmf
C18	470								N1500 10%
C19	1000		77252	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C20	1000		77252	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C21	1500		73748	BPD-0015	DD-152	BYA10D15	B-215	5HK-D15	
C22	1000		77252	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C23	10								N150 10%
C24	22		102793	DI-22	DD-220	L10Q22	CNO-422	5GA-Q22S 10% *	10%
C25	100								N30 5%
C26	1000		102234A	DI-1000		L10T1	JL-210	5GA-D1S 10% *	10%
C27	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C28	.22	200	106354	P288N-22		CUB2P22	GEM-2022	2TM-P22	
C29	1500		104890	DI-1500		L10D15	JL-215	5GA-D1S 10% *	10%
C30	390		105310	DI-390		L10T39		5GA-T39S 10% *	10%
C31	1000		77252	BPD-001	DD-102	L10D1	B-210	5HK-D1	
C32	1000		77252	BPD-001	DD-102	L10D1	B-210	5HK-D1	
C33	.22	200	106354	P288N-22		CUB2P22	GEM-2022	2TM-P22	
C34	.001	2000	106790					TVM-21S 10% *	10% ①
C35	10000		73960	BPD-01	DD-103	BYA10S1	B-210	5HK-S1	
C36	5		106384					5GA-V5S ±.5mmf *	±.5mmf
C37	1800		105524	DI-1800		L10D18	JL-218	5GA-D18S 10% *	10%
C38	10000		73960	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C39	560		105248	DI-560		L10T56	JL-356	5GA-T56S 10% *	10%
C40	.1	600	106372	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C41	.047	200	106107	P288N-047	DF-503	CUB2S47	GEM-2147	2TM-S47	
C42	10000		73960	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C43	10000		73960	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C44	.0068	400	106106.					5BF-D68	10%
C45	.0018	600	106113					6TM-D18S 10% *	10%

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C46	.0027	1600	73818					MB-D27S 10% *	10%
C47	10000		73960	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C48	.0047	600	106369				GEM-16247	6TM-D47S 10% *	10%
C49	1000		102234A	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C50	10000		73960	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C51	.01	400	73561				GEM-1611	5BF-S1	10%
C52	330		105301	DI-330		L10T33	JL-333	5GA-T33S 10% *	10%
C53	.033	400	106392				GEM-1613	5BF-S33	10%
C54	390		105310	LI-390		L10T39		5GA-T39S 10% *	10%
C55	.01	400	106185				GEM-1611	5BF-S1	10%
C56	.0082	400	106393				GEM-16282	5BF-D82	10%
C57	.01	600	106077				GEM-1611	6TM-S1S 10% *	10%
C58	.033	400	106392				GEM-1613	5BF-S33	10%
C59	.12	400	106396					5BF-P12	10%
C60	.001	2000	105320						10%
C61	.0056	400	106394				GEM-16256	5BF-D56	10%
C62	10000	1400	100910			HVE16S1	2HV-110	20HKB-S1	
C63	.056	600	106395				GEM-16256	6TM-S56S 10% *	10%
C64	.47	200	106111				GEM-2047	2WF-P47	10%
C65	.01	400	106185				GEM-1611	5BF-S1	10%
C66	.47	200	106111				GEM-2047	2WF-P47	10%
C67	68	2000	106373						N2200
C68	82		105323		TCZ-82	C10Q82U	CN7-482		N750 10%
C69	1000		102234A	BPD-001	DD-102	BYA10D1	B-210	5GA-D1	
C70	.0033	600	106105	P688N-0033	DD-332	CUB6D33	GEM-6233	6TM-D33	
C71	.27	400	106397				GEM-6027	5BF-P27	10%
C72	390	1000	102512	HVD-15-390	DD-391				
C73	10000		73960	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C74	.01	600	73594					6TM-S1S 5% *	5%
C75	680		39648	1469-00068		1R5T68		MS-368	5%
C76	.0033	600	106105	P688N-0033	DD-332	CUB6D33	GEM-6233	6TM-D33	
C77	.01	600	106077	P688N-01	DD-103	CUB6S1	GEM-611	6TM-S1	
C78	.1	600	106372	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C79	.047	600	106109	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	②
C80	22	1000	105233	HVD-15-22	DD-220	BYA10D1M	CNO-422	20GAB-Q22	
C81	.15	200	106371				GEM-2015	2WF-P15	10%
C82	.47	200	73787	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C83	.47	200	73787	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C84	.1	600	106372	P688N-1			GEM-601	6TM-P1S 10% *	10%
C85	.047	600	106109	P688N-047				6TM-S47S 10% *	10%
C86	56	6000	106370						N2200
C87	.0033	600	106105				GEM-16233	6TM-D33S 10% *	10%
C88	47	4000	106308						N2200
C89	100	3000	106306						N2200 5%
C90	560	2000	106307						N3300 10%
C91	560	2000	106307						N3300 10%
C92	.047	200	106107					2WF-S47	10%
C93	10000		73960	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C94	100	2000	105418					20GAB-T1S 10% *	10%
C95	27								N150 10%
C96	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C97	27		100352	SI 27			UC-5427	5GA-Q27	
C98	.1	400	106110					5BF-P1	10%
C99	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C100	10000		73960	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C101	560		105248	DI-560		L10T56	JL-356	5GA-T56S 10% *	10%
C102	330		105301	DI-330		L10T33	B-333	5GA-T33S 10% *	10%
C103	10000		73960	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C104	.1	200	106374				GEM-201	2WF-P1	10%
C105	330		79191	1469-00033		5R5T33		MS-333	5%
C106	5		103700	SI 5	D6-050	L10V5	ZT-555	5GA-V5	
C107	2		106376					5TCCB-V2S	±.25mmf
								±.25mmf *	
C108	330		79191	1469-00033		5R5T33		MS-333	5%
C109	180						CN7-318		N750 5%
C110	10000		73960	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C111	330		79191	1469-00033		5R5T33		MS-333	5%
C112	120		105242	DI-120	DD-121	L10T12	CNO-312	5GA-T12S 10% *	10%
C113	4		105247					5TCCB-V4S	±.5mmf
								±.5mmf *	
C114	4700		105244	BPD-0047	DD-472	BYA10D47	B-247	5HK-D47	
C115	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C116	15			NPO-DI 15	DTZ-15	C10Q15C	CNO-415	5TCC-T15S 10% *	NPO 10%
C117	10000		73960	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C118A	10000		75877	BPD-01	DD3-103	BYC6DD1	B-110	5HK-2S1	
B	10000			BPD-01			B-110		
C119	220		105245	DI-220	DTZ-220	L10T22	JL-322	5GA-T22S 10% *	10%
C120	82				DTZ-82		CNO-482	5TCC-Q82S 10%*	NPO 10%
C121	.047	200	106107	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C122	10-160		105217						
C123	22			NPO-DI 22	DTZ-22		CNO-422	5TCC-Q22S 10%*	NPO 10%
C124	.047	400	106108	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C125	22			NPO-DI 22	DTZ-22	C10Q22C	CNO-422	5TCC-Q22S 10%*	NPO 10%
C126	.01	400	106185				GEM-1611	5BF-S1	10%
C127	.047	400	106108					5BF-S47	10%
C128	.22	400	106375				GEM-4022	5BF-P22	10%
C129	.01	400	106185				GEM-1611	5BF-S1	10%
C130	.047	400	106108					5BF-S47	10%
C131	.01	400	106185				GEM-1611	5BF-S1	10%
C132	.047	400	106108					5BF-S47	10%
C133	1000		77252	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C134	1000		77252	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C135	1000		77252	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C136	.1	200					GEM-201	2WF-P1	10%
C137	.1	200					GEM-201	2WF-P1	10%
C138	.056	200	106323					2WF-S56	10%
C139	.082	200	106324					2WF-S82	10%
C140	.1	200					GEM-201	2WF-P1	10%
C141	10000		73960	BPD-01	DD-103	BYA10S1	B-210	5HK-S1	
C142	10000		73960	BPD-01	DD-103	BYA10S1	B-210	5HK-S1	
C143	.047	600	73592	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C144	1000		77252	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	

① Some versions may use a 470mmf 2KV in this application.
② Not used in some versions.
* Not normally in distributors stock. Available thru distributor on order to manufacturer.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	[illegible]	½	105201	F1-1				Color, Note 1
B	1meg	½		R3-57				Volume, Tap ④ 200K, Note 1
C	Switch			KR-1 or KR-1*				
R2A	2.5meg	½	105200					Tone
B	5meg	½						Height
R3A	500Ω	½	105199					Contrast
B	1meg	½						Killer Threshold
R4A	2.5meg	½	105947					Vert. Hold
B	100K	½						Vert. Lin.
R5A	1200Ω	½	105193	F1-7			‡ QJ-991	†UZ3807 Trk, Note 2
B	250K	½		R3-34				Brightness, Note 2
R6A	2.5meg	½	105204	AB-83	A47-2.5meg -S	Q1-239	TA255L	Noise
B	Shaft		Not Req.	FKS-1/4	Not Req.	Not Req.	Not Req.	
R7A	1meg	½	105208	AB-69	A47-1meg-S	Q1-137	TA16L	* Red Screen
B	Shaft		AK-1	FKS-1/4	Not Req.	Not Req.	Not Req.	
R8A	2meg	½	105206	AB-75	A47-2meg-S	Q1-139	TA26L	Red Background
B	Shaft		AK-1	FKS-1/4	Not Req.	Not Req.		
R9A	1meg	½	105208	AB-69	A47-1meg-S	Q1-137	TA16L	Blue Screen
B	Shaft		AK-1	Not Req.	Not Req.	Not Req.	Not Req.	
R10A	2meg	½	105206	AB-75	A47-2meg-S	Q1-139	TA26L	Blue Background
B	Shaft		AK-1	FKS-1/4	Not Req.	Not Req.	Not Req.	
R11A	1meg	½	105208	AB-69	A47-1meg-S	Q1-137	TA16L	Green Screen
B	Shaft		AK-1	FKS-1	Not Req.	Not Req.	Not Req.	
R12A	2meg	½	105206	AB-75	A47-2meg-S	Q1-139	TA26L	Green Background
B	Shaft		AK-1	FKS-1/4	Not Req.	Not Req.	Not Req.	
R13A	15Ω	3(WW)	105207	WI-150	A35-15	R3L		Vert. Centering
B	Shaft		Not Req.	FKS-1/4	SK-4	Not Req.		
R14	100K	3(WW)	105208A				M100MPK	Focus
R15	100Ω	3(WW)	105209					Horiz. Centering
R16	750Ω	½	105297					Sound Reject
R17A	1meg	½	105211	AB-69	A47-1meg-S	Q1-137	TA16L	AGC
B	Shaft		AK-1	FKS-1/4	Not Req.	Not Req.	Not Req.	
R18	10K	½	105388					Sound Attenuation
R19A	250K	½	105203	AB-80	A47-250K-S	Q1-130	TA254L	Horiz. Drive
B	Shaft			AK-1	FKS-1/4	R2	Not Req.	
R20A	500K	½	105210	AB-69	A47-500K-S	Q1-133	TA55L	Hi-Voltage Adjustment
B	Shaft			AK-1	FKS-1/4	SQ	Not Req.	
R21	120Ω	1(WW)	105220					Blue Vert. Amp.
R22	1200Ω	1(WW)	105220					Green Vert. Amp.
R23	1200Ω	1(WW)	105220					Red Vert. Amp.
R24	50Ω	1(WW)	105059				PFL-50	Blue Vert. Tilt
R25	30Ω	1(WW)	105231					Green Vert. Tilt
R26	30Ω	1(WW)	105231					Red Vert. Tilt
R27	120Ω	1(WW)	105220					Left Horiz. B-3
R28	50Ω	1(WW)	105059				PFL-50	Left Horiz. R-G-4
R29	50Ω	1(WW)	105059				PFL-50	Left Horiz. R-G-3

* Use KB with CRL "blue label" controls and KR with "red label" controls.
Note 1. Used in Ch. CTC7AA, AB, AC, AD. Ch. CTC7AE, AF, AH, AJ use Part #106554.
Ch. CTC7AK, AL use Part #106953.
Note 2. Used in Ch. CTC7AA, AB, AC, AD. Ch. CTC7AE, AF, AH, AJ use Part #106555.
Ch. CTC7AK, AL use Part #106954.
† "STA-LOC" Equivalent: FB152R, OF83, RU2541, IS625.
‡ "Concentrikit" Equivalent: K-6 Kit, Base Elements & Shafts: B17-208, P14-026 (Panel) B11-1301, R2-122 (Rear)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	NOTES
R30	2.7meg 5%			
R31	3300Ω 5%			
R32	1000Ω			
R33	150Ω			
R34	47Ω 5%			
R35	1000Ω			
R36	150Ω			
R37	3900Ω	10	106598	
R38	22K	1		Note 1
R39	18K	4		Note 1
R40	82Ω 5%			
R41	470Ω			
R42	5600Ω	5	105222	
R43	150Ω			
R44	10K			
R45	8200Ω 5%			
R46	12K 5%			
R47	3.9meg			Note 1
R48	68000Ω 5%	7	106228	
R49	220Ω			
R50	150K			
R51	22K	3		
R52	56Ω			
R53	1500Ω			
R54	100K			
R55	82K			
R56	1800Ω			
R57	270K			
R58	56K			
R59	22K			
R60	220Ω			
R61	68Ω			
R62	1000Ω			
R63	62K			
R64	390K 5%			
R65	330K 5%			
R66	330K 5%			
R67	100K 5%			
R68	3300Ω	3	103877	
R69	82Ω			
R70	1meg			
R71	1meg			
R72	150K			
R73	470K			
R74	3300Ω	3	103877	
R75	470Ω			
R76	47K			

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	NOTES
R77	2.4meg 5%			
R78	2.4meg 5%			
R79	2.2meg			
R80	1meg			
R81	22K			
R82	100Ω			
R83	39K			
R84	1.2meg			
R85	1meg			
R86	33K			
R87	560K			
R88	1meg 5%			
R89	10K	2		
R90	8200Ω			
R91	100K			
R92	10K			
R93	8.2meg 5%			
R94	33K			
R95	22K 5%	2		
R96	1meg 5%			
R97	1.8meg			
R98	1.8meg			
R99	47K			
R100	15K 5%			
R101	47K 5%	1		
R102	470K			
R103	2.2meg 5%			
R104	120K			
R105	2700Ω 5%	7	105223	
R106	330K			
R107	270Ω 5%		502127	
R108	4.8Ω Cold			
R109	270Ω 5%		502127	
R110	8200Ω			
R111	330K			
R112	82K			
R113	680K 5%			
R114	270K 5%	1		
R115	8200Ω			
R116	1meg			
R117	68K			
R118	100K	1		
R119	39K	2		
R120	10meg			
R121	100Ω			
R122	47Ω			
R123	16K	7	106365	

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	NOTES
R124	120K	2		Note 1
R125	68K	1		
R126	3.6Ω	1	106366	
R127	22meg	2		
R128	22meg	2		
R129	22meg	2		
R130	1meg	2		
R131	1.5meg 5%	1		
R132	1.5meg 5%	1		
R133	10K			
R134	56K			
R135	100meg	1		
R136	47Ω			
R137	4700Ω	2	522347	
R138	33K 5%	2		
R139	10meg			
R140	47K			
R141	10K 5%			
R142	1meg 5%			
R143	6.2meg 5%			
R144	12K	3	105225	
R145	100K			
R146	1000Ω			
R147	22K	2		
R148	330Ω			
R149	5600Ω			
R150	1000Ω			
R151	10K 5%			
R152	120K 5%	1		
R153	39K 5%	4	105753	
R154	470K		106461	Note 2
R155	2700Ω 5%			
R156	270Ω 5%			
R157	470K		106461	Note 2
R158	1meg			
R159	1800Ω			
R160	3.3meg 5%			Note 3
R161	1500Ω 5%			
R162	33K			
R163	15K	2		
R164	27K	2		

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	NOTES
R165	680Ω 5%			
R166	47K			
R167	1000Ω			
R168	47K	1		
R169	1500Ω	1		
R170	150Ω			
R171	5600Ω 5%	1		
R172	5600Ω 5%	1		
R173	4700Ω	1		
R174	1meg			
R175	15K	3	105224	
R176	390K			
R177	1.5meg			
R178	3900Ω 5%	2		
R179	1meg			
R180	15K	3	105224	
R181	390K			
R182	1.5meg			
R183	1meg			
R184	15K	3	105224	
R185	390K			
R186	1.5meg			
R187	2700Ω 5%	3	106792	
R188	3000Ω 5%	7	106791	
R189	1500Ω 5%	3	106793	
R190	2700Ω			
R191	100K	2		
R192	100K	2		
R193	100K	2		
R194	100Ω			
R195	82Ω	1		
R196	100Ω	1		
R197	100Ω	1		
R198	100Ω	1		
R199	1600Ω	10	102170	
R200	1600Ω	10	102170	
R201	10K	1		
R202	820K			
R203	820K			
R204	39Ω			Note 1

Note 1. Not used in some versions.
Note 2. Resistors R154 and R157 are a matched pair.
Note 3. Some versions may use 39meg in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA RCA Victor PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	47.25MC Trap	105306					
L2	41.25MC Trap	[illegible]					
L3	1st Video IF	[illegible]					
L4	Fil. Choke						
L5	2nd Video IF	[illegible]					
L6	Fil. Choke						
L7	3rd Video IF	106387					
L8	RF Choke	100441	19-2864	BC-566	4622		12 Microhenries
L9A	4th Video IF	105294					
B	41.25MC Trap						
L10	RF Choke	105308	19-2864	BC-[illegible]	4622		12 Microhenries
L11	4.5MC Trap	105295					
L12	RF Choke	[illegible]					1.8 Microhenries
L13	Series Peaking Coil	102301	19-4080 *	TV-193 *	6110 *		62 Microhenries, wound on 1meg resistor
L14	Shunt Peaking Coil	104904	19-3180	TV-184	6180	VP-5	180 Microhenries
L15	Series Peaking Coil	102196	19-3180 ▲	TV-184 ▲	6180 ▲	VP-5 ▲	180 Microhenries, wound on 1800Ω resistor
L16	Shunt Peaking Coil	104904					180 Microhenries
L17	Series Peaking Coil	106311	19-3250 ▲	TV-185 ▲	6181 ▲	VP-6 ▲	250 Microhenries, wound on 8200Ω resistor
L18	Series Peaking Coil	106255	19-3250 +	TV-185 +	6181 +	VP-6 +	250 Microhenries, wound on 15K resistor
L19	Series Peaking Coil	106378	19-3086	TV-180	6176	VP-1	36 Microhenries
L20	Shunt Peaking Coil	106377	19-3050	TV-193	6110		62 Microhenries
L21	RF Choke	100441	19-2864	BC-566	4622		12 Microhenries
L22	1st Sound IF	106381					
L23	2nd Sound IF	106382					
L24	Quadrature Coil	[illegible]					
L25	Burst Amp. Trans.	105214					
L26	RF Choke	105250	19-2864	BC-566	4612		12 Microhenries
L27	1st Chroma Grid Coil	105212					
L28	1st Chroma Bandpass	105213					
L29	2nd Chroma Bandpass	105251					
L30	Series Peaking Coil	102248	19-3660	TV-205	6146		620 Microhenries
L31	Chroma Ref. Osc. Control Plate Coil	105216					
L32	Chroma Ref. Osc. Control Plate Trans.	105215					
L33	Series Peaking Coil	102248					620 Microhenries
L34	RF Choke	100441	19-2864	BC-566	4622		12 Microhenries
L35	RF Choke	100441	19-2864	BC-566	4622		12 Microhenries

* Parallel with 1meg resistor.
▲ Parallel with 8200Ω resistor.
▲ Parallel with 1800Ω resistor.
+ Parallel with 15K resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA Victor PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L36	87Ω		105197		TV-165			HS-7	Horiz. Freq. tapped ②24Ω
L37	45Ω		102195						Horiz. Waveform

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES	RATINGS INDUCTANCE @ CURRENT 1000 (~)	REPLACEMENT DATA RCA Victor PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
L38	.440A	17Ω	7 Hy.	105195						

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L39	Horiz. Linearity	105196								
L40	Right Horiz. B-1	105065								
L41	Right Horiz. R-G-1	105065								
L42	Right Horiz. R-G-2	105066								
L43	Conv. Yoke									
A	Green Coil	106319								
B	Blue Coil	106319								
C	Red Coil	106319								

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA RCA Victor PART No	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
	PRI.	SEC. 1	SEC. 2							
T1	117V	150V	6.3V	[illegible]						
	②3.8A	④ 880A	⑤ 2A							
	SEC. 3	SEC. 4	SEC. 5							
	6.3V									
	④13A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Vert. Output	106360							
T3	Vert. Conv. Choke	106361							
T4	Yoke-Horiz. (12MH) -Vert. (35MH)	106305 ①							
T5	Horiz. Output	106359							

① Includes R107, R108, R109, R137, C88, C89, C90 and C91.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	7600Ω	3-4Ω	100037	[illegible]	A-3020	AU-804	A-3849	26S48	S-9Z	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA RCA Victor PART No.	QUAM PART No.	NOTES
SP1	8"	PM	3-4Ω	74664 ①	8A21	① Used in all Models except 21RC8975, 7, & U, 21RC8985, 7, & U
SP2	3½"	PM	9Ω	102119 ②	3A15T29	② Models 21CD8906M, 7M, & MU, 21CD8R0M, 4M, & MU, 21RC8985, 7, & U, 21CD8865M, 6M, 7M, & MU, 21CD8845M, 6M, 7M, & MU, 21RC8995, 6, & U
SP3	3½"	PM	9Ω	102119 ②	3A15T29	
	6" x 9"	PM	3-4Ω	101182 ③	[illegible]	
	6" x 9"	PM		106863 ④		
	4" x 8"	PM	3-4Ω	106808 ⑤		③ Models 21RC8985, 7, & U, 21CD8865M, 6M, 7M, & MU, 21CD8845M, 6M, 7M, & MU
	4" x 6"	PM		106823 ⑥		④ Models 21RC8995, 6, & U
						⑤ Models 21RC8975, 7, & U
						⑥ Models 21CD8776M, 7M

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA RCA Victor PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No	INTERNATIONAL PART No	SARKES TARZIAN PART No.	NOTES
M1	.440A	106379 ①	HA505 ①		SD-500 ①	F6 ①	① Silicon Type.
M2	.440A	106379 ①	HA505 ①		SD-500 ①	F6 ①	② Selenium Type.
M3		105064 ②					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA RCA Victor PART No. FUSE	RCA Victor PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M4			102792		2½" Length of #21 Wire			
M5	C	3½A 250V	106357	106356	313003.5 (C-3½A-250V)	346007	C 3½	HC 3½ to 3½
M6	3AG	3/4A 250V	106352		318.750		GMV 3/4	

RCA VICTOR CHASSIS CTC7AA, AB, AC, AD, AE, AF, AH, AJ, AK, AL, AM, AN, CRK1A, CTP6A, KRK83B, KRK84A

FOLDER 2

PARTS LIST AND DESCRIPTIONS (Continued)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		RCA Victor PART No.	CBS PART No.	SYLVANIA PART No.	
M7	1N60	105517	1N60	1N295	Video Detector (Pigtail)
M8	1N60	105517	1N60	1N295	Sound Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M9	Lamp		#47
M10	Lamp		#47
M11	Tuner	KRK48B	VHF, Ch. CTC7AA, AC
	Tuner	KRK48C	VHF, Ch. CTC7AK
	Tuner	KRK75A	VHF, Ch. CTC7AE, AH
	Tuner	KRK75B	VHF, Ch. CTC7AM
	Tuner	KRK49B	VHF with UHF Provisions Ch. CTC7AB, AD
	Tuner	KRK49C	VHF with UHF Provisions Ch. CTC7AL
	Tuner	KRK76A	VHF with UHF Provisions Ch. CTC7AF, AJ
	Tuner	KRK76B	VHF with UHF Provisions Ch. CTC7AN
	Tuner	KRK66M	UHF, Ch. CTC7AB, AD
	Tuner	KRK66L	UHF, Ch. CTC7AF, AJ
	Tuner	KRK66P	UHF, Ch. CTC7AL
	Tuner	KRK66R	UHF, Ch. CTC7AN
M12	Delay Line	105253	
M13	Thermal Switch	106541	
M14	Crystal	105330	3.579545MC
M15	Magnet	105024	Convergence (3 used)
M16	Magnet	103172	Blue Lateral Assy.
M17	Magnet	105027	Color Purity
	Connector	105890	High Voltage Lead Assy., 28" Long
	Microphone	106586	Remote Control Receiver Transducer, Models 21RC8975, 7, & U, 21RC8985, 7, & U
	Microphone	106862	Remote Control Receiver Transducer, Models 21RC8995, 6, & U
	Printed Board	106348	Sound (Less Tubes)
	Printed Board	106350	Video IF (Less Tubes)
	Printed Board	106349	Video (Less Tubes)
	Printed Board	106531	Vert. (Less Tubes)
	Printed Board	106352	Sync (Less Tubes)
	Printed Board	106318	Convergence (Less Tubes)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	105014	Models 21CD8725M, 7M, MU, 21CT8712M, MU
Safety Glass	106781	Models 21CD8845M, 6M, 7M, & MU, 21RC8995, 6, & U
Safety Glass	105008	Models 21CD8906M, 7M, & MU, 21CD8910M, 4M, & MU, 21RC8975, 7, & U, 21CD8776M, 7M, 21RC8985, 7, & U, 21CD8865M, 6M, 7M, & MU
Mask	106704	Models 21CD8906M, 7M, & MU, 21CD8865M, 6M, 7M, & MU, 21CD8776M, 7M, 21CD8845M, 6M, 7M, & MU
Mask	106459	Models 21CD8910M, 4M, & MU, 21RC8975, 7, & U, 21RC8985, 7, & U, 21RC8995, 6, & U
Mask	105970	Models 21CD8725M, 7M, & MU, 21CT8712M, MU
Knob	104979	VHF Channel Selector, Models 21CD8727M, 21CD8776M, 7M
Knob	106309	VHF Channel Selector, Model 21CT8712M
Knob	104985	VHF Channel Selector, Models 21CD8906M, 7M, & MU, 21CD8866M, 7M, & MU
Knob	104986	VHF Channel Selector, Models 21CD8910M, 4M, & MU
Knob	104984	VHF Channel Selector, Models 21CD8865M, MU
Knob	106783	VHF Channel Selector, Models 21CD8845M, 6M, 7M, & MU
Knob	104978	VHF Channel Selector, Model 21CD8725M
Knob	106607	Channel Selector, Models 21RC8975, U, 21RC8985, U
Knob	106608	Channel Selector, Models 21RC8977, U, 21RC8987, U
Knob	104981	VHF-UHF Channel Selector, Model 21CD8725MU
Knob	104982	VHF-UHF Channel Selector, Model 21CD8727MU
Knob	106310	VHF-UHF Channel Selector, Model 21CT8712MU
Knob	101144B	VHF-UHF Channel Selector, Models 21CD8845MU, 6MU, 7MU
Knob	104987	Fine Tuning, Models 21CD8725M, MU, 21CD8865M, MU
Knob	104988	Fine Tuning, Models 21CD8727M, MU, 21CD8906M, 7M, & MU, 21CD8866M, 7M, & MU, 21CD8776M, 7M
Knob	106311	Fine Tuning, Models 21CT8712M, MU
Knob	104989	Fine Tuning, Models 21CD8910M, 4M, & MU
Knob	106609	Fine Tuning, Models 21RC8975, U, 21RC8985, U
Knob	106610	Fine Tuning, Models 21RC8977, U, 21RC8987, U
Knob	101276B	Fine Tuning, Models 21CD8845M, 6M, 7M, & MU
Knob	102653	UHF Tuning, Models 21CD8725MU, 21CD8865MU, 21RC8995U
Knob	102578	UHF Tuning, Models 21CD8727MU, 21CD8906MU, 7MU, 21CD8866MU, 7MU, 21RC8996U
Knob	102580	UHF Tuning, Model 21CT8712MU
Knob	102749	UHF Tuning, Models 21CD8910MU, 4MU
Knob	106613	UHF Tuning, Models 21RC8975U, 21RC8985U
Knob	106614	UHF Tuning, Models 21RC8977U, 21RC8987U
Knob	106103	UHF Dial Escutcheon, Models 21CD8727MU, 21CD8906MU, 7MU, 21CD8910MU, 4MU, 21CD8866MU, 7MU, 21RC8996U
Knob	106104	UHF Dial Escutcheon, Model 21CT8712MU
Knob	106282	UHF Dial Escutcheon, Models 21CD8845MU, 6MU, 7MU
Knob	106611	UHF Dial Escutcheon, Models 21RC8975U, 21RC8985U
Knob	106612	UHF Dial Escutcheon, Models 21RC8977U, 21RC8987U
Dial	106675	VHF Channel Indicator Drum, Ch. CTC7AE
Dial	106673	VHF Channel Indicator Drum, Ch. CTC7AH
Dial	106803	VHF Channel Indicator Drum, Ch. CTC7AK
Dial	106676	VHF-UHF Channel Indicator Drum, Ch. CTC7AF
Dial	106674	VHF-UHF Channel Indicator Drum, Ch. CTC7AJ
Dial	106804	VHF-UHF Channel Indicator Drum, Ch. CTC7AL
Knob	104990	Volume, Brightness, Models 21CD8725M, MU, 21CD8865M, MU
Knob	104991	Volume, Brightness, Models 21CD8727M, MU, 21CD8906M, 7M, & MU, 21CD8866M, 7M, & MU, 21CD8776M, 7M

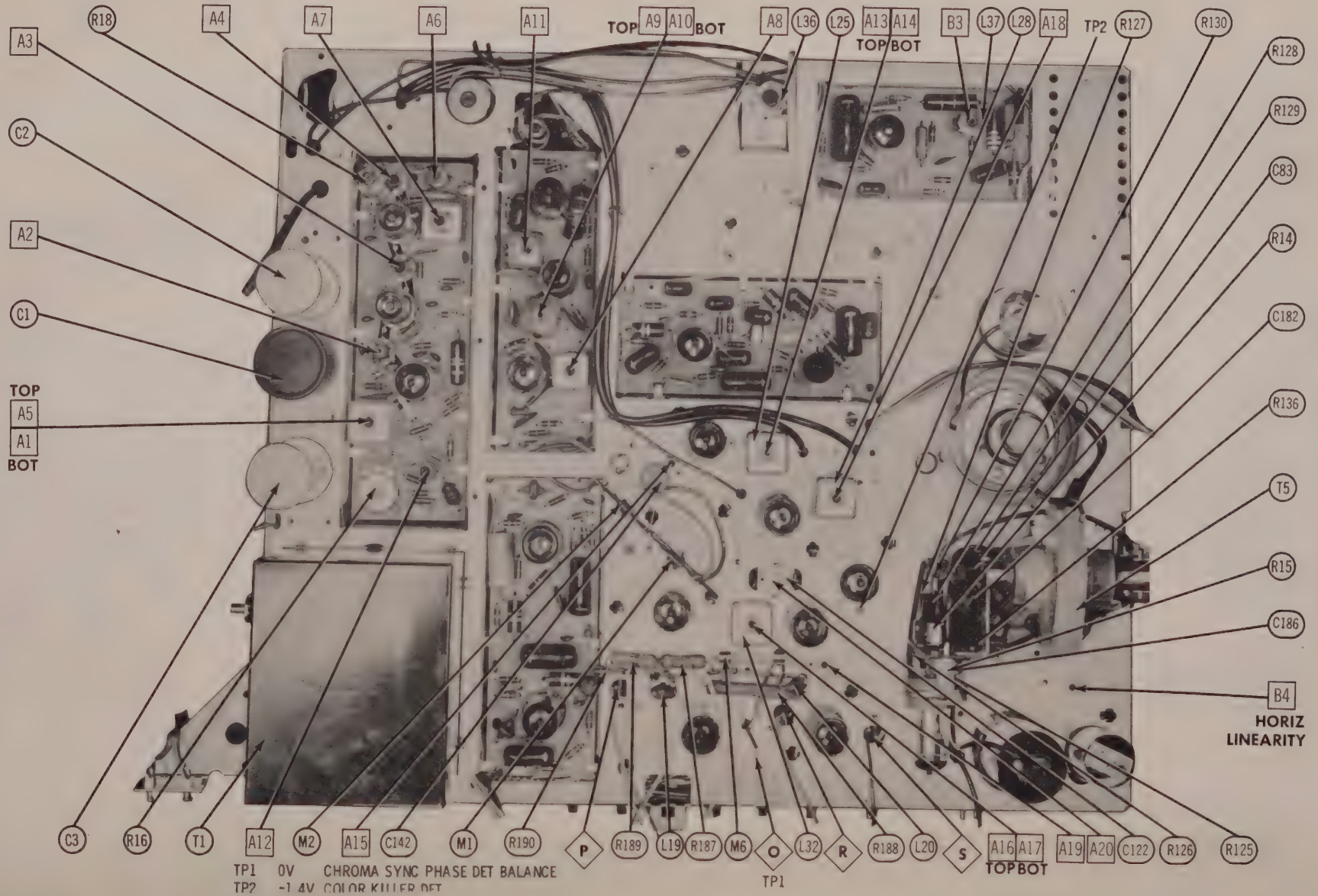
PARTS LIST AND DESCRIPTIONS (Continued)

CABINETS & CABINET PARTS (cont)

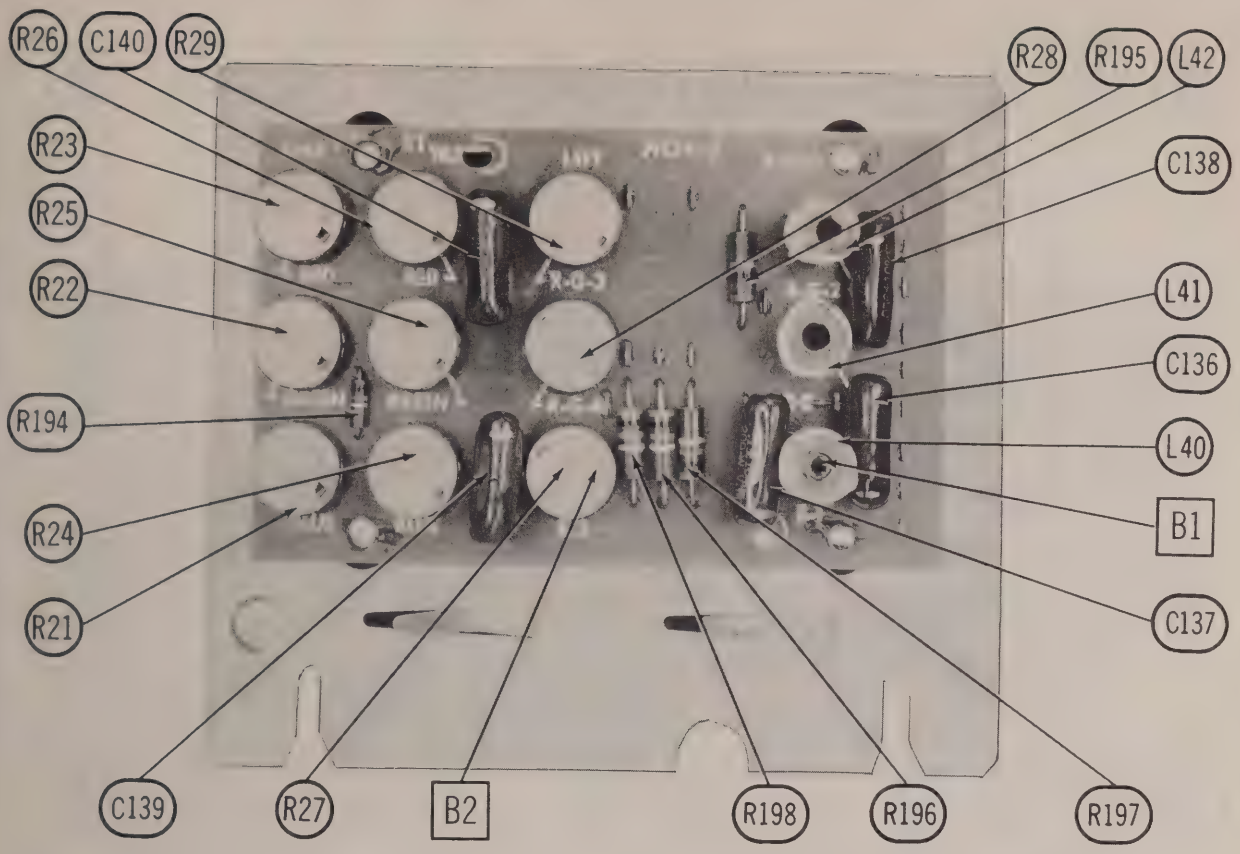
NAME	PART NO.	DESCRIPTION
Knob	106315	Volume, Brightness, Models 21CT8712M, MU
Knob	104992	Volume, Brightness, Models 21CD8910M, 4M, & MU
Knob	106615	Volume, Brightness, Models 21RC8975, U, 21RC8985, U
Knob	106616	Volume, Brightness, Models 21RC8977, U, 21RC8987, U
Knob	106784	Volume, Brightness, Models 21CD8845M, 6M, 7M, & MU
Knob	106784	Volume, Brightness, Models 21CD8845M, 6M, 7M, & MU
Knob	102581	Vert. Hold, Tone
Knob	79533	Horiz. Freq. Coil
Knob	106317	Horiz. Hold
Knob	104993	Color or Hue, Models 21CD8725M, MU, 21CD8865M, MU
Knob	104994	Color or Hue, Models 21CD8727M, MU, 21CD8727M, MU, 21CD8906M, 7M, & MU, 21CD8866M, 7M, & MU, 21CD8776M, 7M
Knob	106316	Color or Hue, Models 21CT8712M, MU
Knob	104995	Color or Hue, Models 21CD8910M, 4M, & MU
Knob	106617	Color or Hue, Models 21RC8975, U, 21RC8985, U
Knob	106618	Color or Hue, Models 21RC8977, U, 21RC8987, U
Knob	106785	Color or Hue, Models 21CD8845M, 6M, 7M, & MU
Knob	100407	Focus Control
Cabinet	M4457	Model 21CD8876M
Cabinet	M4458	Model 21CD8777M
Cabinet	M4489	Models 21CD8845M,MU
Cabinet	M4490	Models 21CD8846M, MU
Cabinet	M4491	Models 21CD8847M, MU
Cabinet	M4449	Models 21CD8865M, MU
Cabinet	M4450	Models 21CD8866M, MU
Cabinet	M4451	Models 21CD8867M, MU
Cabinet	Z4358	Models 21CT8712M, MU
Cabinet	Z4359	Models 21CD8725M, MU
Cabinet	Z4360	Models 21CD8727M, MU
Cabinet	X4371	Models 21CD8906M, MU
Cabinet	X4372	Models 21CD8907M, MU
Cabinet	X4369	Models 21CD8910M, MU
Cabinet	X4370	Models 21CD8914M, MU
Cabinet	X4429	Models 21RC8975, U
Cabinet	X4430	Models 21RC8977, U
Cabinet	X4431	Models 21RC8985, U
Cabinet	X4432	Models 21RC8987, U
Cabinet	X4508	Models 21RC8995, U
Cabinet	X4509	Models 21RC8996, U
Legs	X5027	Models 21CD8865M, MU
Legs	X5028	Models 21CD8866M, MU
Legs	X5029	Models 21CD8867M, MU
Legs	X5031	Models 21CD8776M
Legs	X5032	Models 21CD8777M
Cover	106697	Hidden Control, Models 21CD8865M, MU
Cover	106698	Hidden Control, Models 21CD8776M, MU, 21CD8866M, MU
Cover	106699	Hidden Control, Models 21CD8777M, 21CD8867M, MU, 21CD8907M, MU
Cover	104519	Hidden Control, Models 21CD8725M, MU
Cover	103994	Hidden Control, Models 21CT8712M, MU
Cover	103995	Hidden Control, Models 21CD8727M, MU
Cover	106712	Hidden Control, Models 21CD8906M, MU
Cover	106713	Hidden Control, Models 21CD8910M, MU
Cover	106714	Hidden Control, Models 21CD8914M, MU
Cover	106580	Receiver includes Bezel Assembly, Models 21RC8975, 7 & U
Cover	106644	Receiver includes Bezel Assembly, Models 21RC8985, 7 & U

WIRING DATA

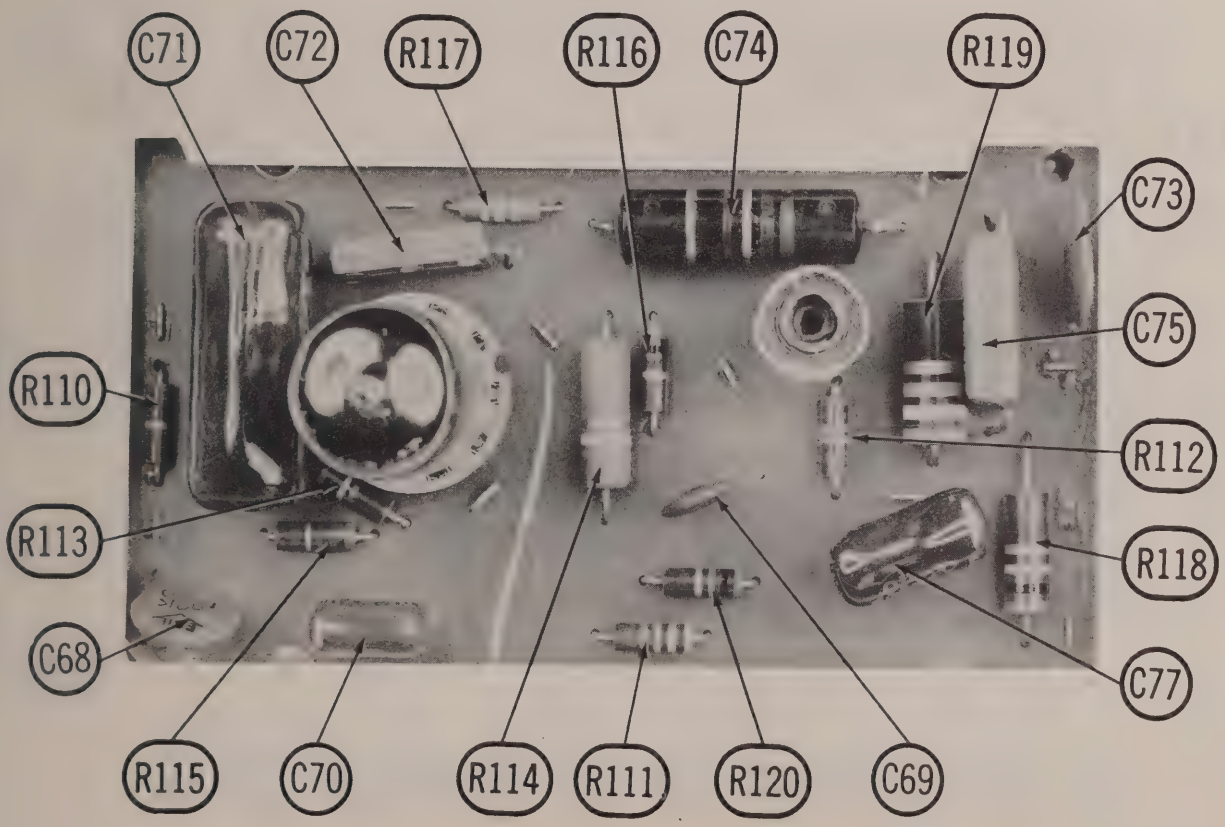
High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



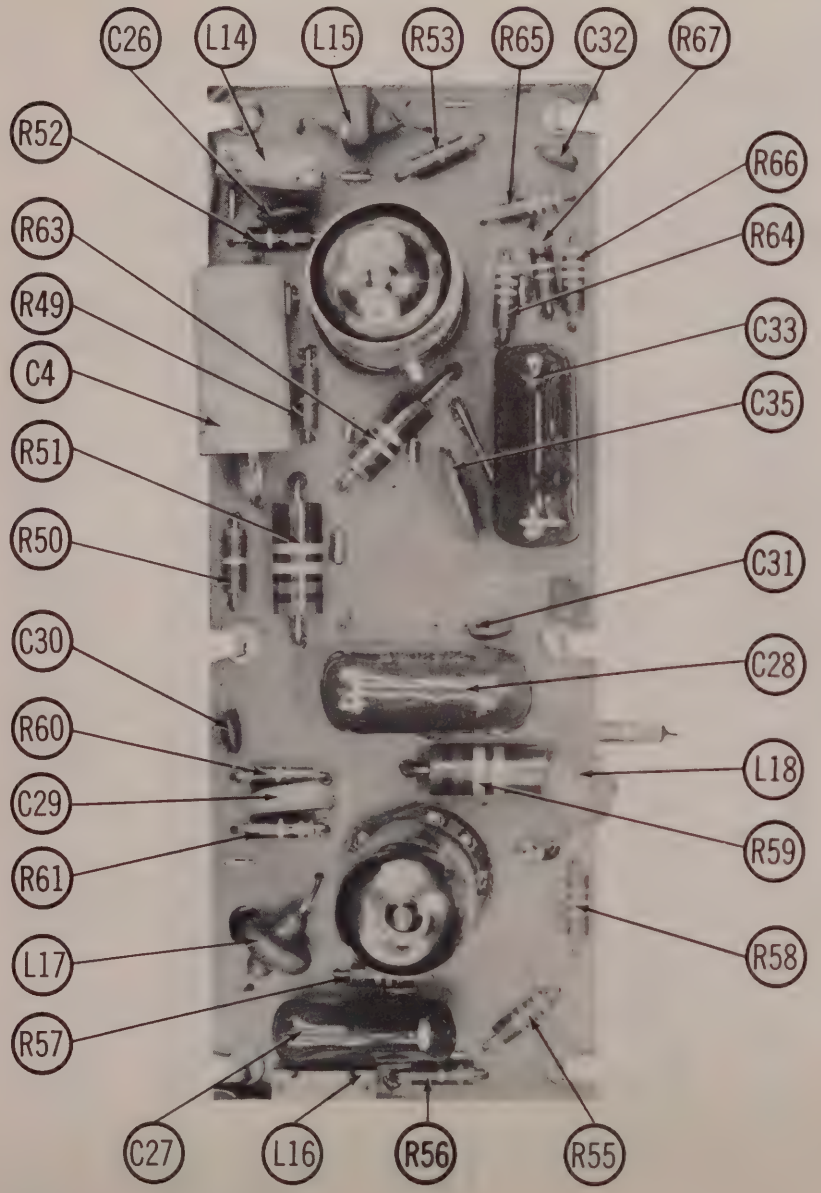
CHASSIS - TOP VIEW



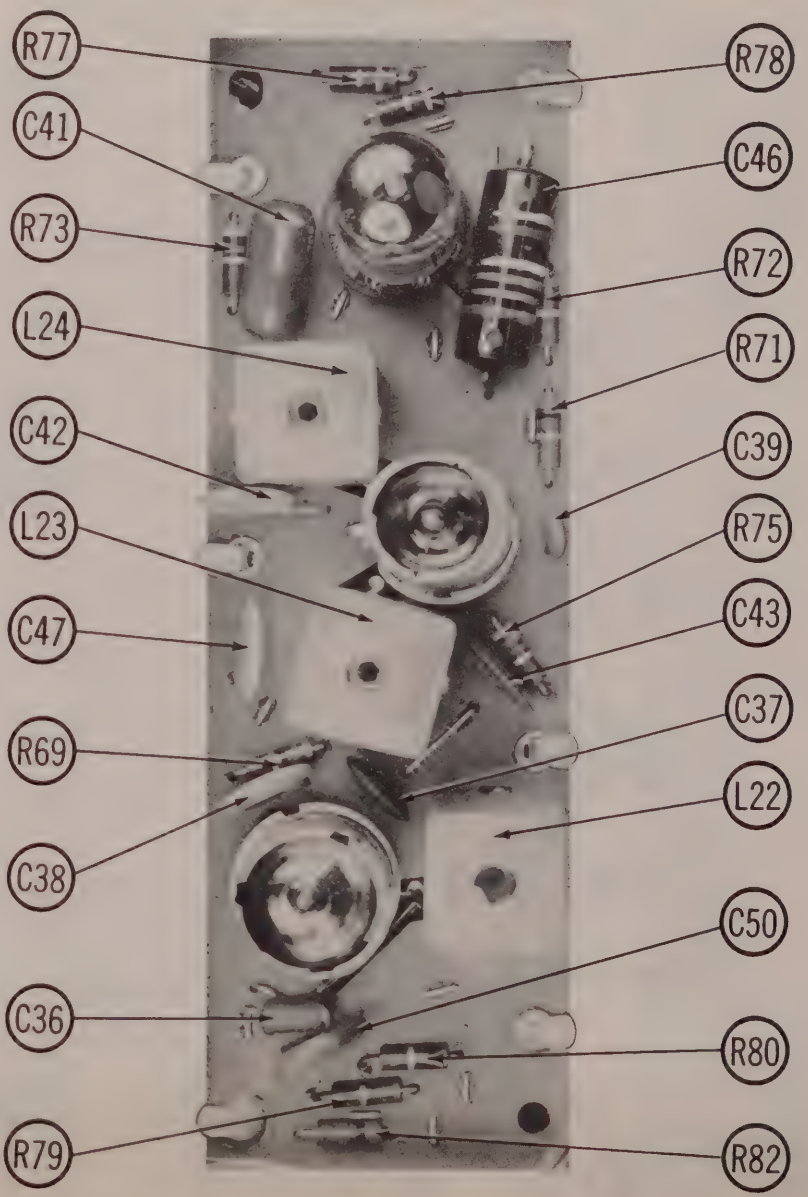
CONVERGENCE PRINTED BOARD



HORIZONTAL PRINTED BOARD



VIDEO & AGC PRINTED BOARD



NOISE INV & SOUND PRINTED BOARD

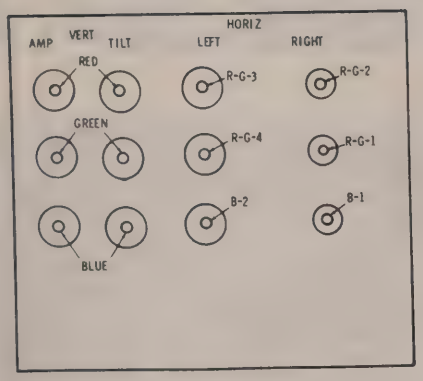
CHASSIS BOTTOM VIEW - CAPACITOR, ALIGN, COIL & MISC IDENT

RESISTANCE MEASUREMENTS

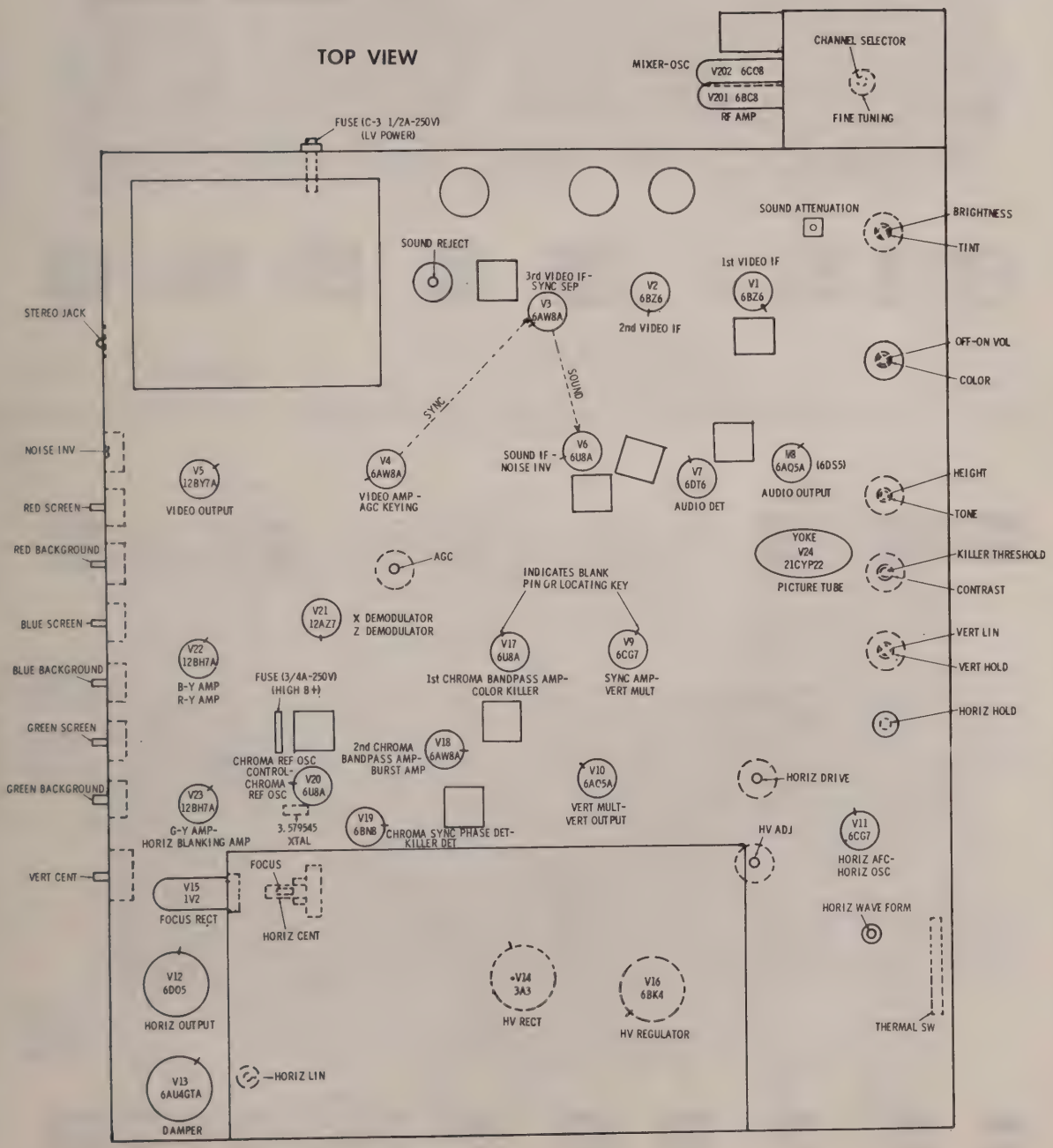
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	100K	47Ω	0Ω	.1Ω	†4200Ω	†4200Ω	0Ω		
V2	6BZ6	100K	82Ω	.1Ω	0Ω	†4200Ω	†4200Ω	0Ω		
V3	6AW8A	0Ω	2.2meg	▪ 1meg	.1Ω	0Ω	150Ω	.1Ω	†7500Ω	†7500Ω
V4	6AW8A	▪ 0Ω	● †85K	760K	.1Ω	0Ω	850Ω	6200Ω	†23K	†7200Ω
V5	12BY7A	●450Ω	● 450K	0Ω	.1Ω	.1Ω	0Ω	†4800Ω	†23K	0Ω
V6	6U8A	▪ †25K	6.5Ω	▪3300Ω	.1Ω	0Ω	▪3300Ω	82Ω	950Ω	● 1meg
V7	6DT6	4.6Ω	470Ω	.1Ω	0Ω	†750K	▪3300Ω	470K		
V8	6AQ5A	1.4meg	¶	.1Ω	0Ω	†350Ω	†800Ω	1.4meg		
V9	6CG7	▪ †10K	33K	0Ω	.1Ω	0Ω	● †4.3meg	● 2.7meg	0Ω	0Ω
V10	6AQ5A	2.5meg	25Ω	0Ω	.1Ω	†3100Ω	†2700Ω	2.5meg		
V11	6CG7	†0Ω	330K	480K	.1Ω	0Ω	†39K	550K	0Ω	0Ω
V12	6DQ5	10meg	0Ω	0Ω	†14K	10meg	0Ω	.1Ω	†14K	TOP CAP †13Ω
V13	6AU4GTA	NC	NC	¶	NC	†16Ω	NC	0Ω	.1Ω	
V14	3A3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †610Ω
V15	1V2	TP	NC	NC	66meg	66meg	TP	NC	NC	● †78K
V16	6BK4	†10Ω	†10K	NC	NC	●850K	NC	†10K	NC	TOP CAP INF
V17	6U8A	147K	12meg	†13K	.1Ω	0Ω	†13K	0Ω	0Ω	10meg
V18	6AW8A	330Ω	100K	†23K	0Ω	.1Ω	10K	5600Ω	†800Ω	†1000Ω
V19	6BN8	18meg	270Ω	18meg	0Ω	.1Ω	270Ω	13meg	13meg	18meg
V20	6U8A	†14K	47K	†48K	0Ω	.1Ω	†1800Ω	0Ω	680Ω	18meg
V21	12AZ7	†6400Ω	2.5Ω	1500Ω	.1Ω	.1Ω	†6400Ω	2.5Ω	1500Ω	0Ω
V22	12BH7A	†15K	1meg	390Ω	.1Ω	.1Ω	†15K	1meg	390Ω	0Ω
V23	12BH7A	†39K	120K	330Ω	.1Ω	.1Ω	†15K	1meg	390Ω	0Ω
V24	21CYP22	†10K	†370K	● †110K	†7500Ω	†3300Ω	†370K	†110K	NC	67meg
		Pin 10 NC	Pin 11 ● †110K	Pin 12 †370K	Pin 13 †3000Ω	Pin 14 †10K				
V201	6BC8	†5500Ω	500K	600K	0Ω	.1Ω	600K	900K	0Ω	0Ω
V202	6CQ8	†7700Ω	100K	INF	.1Ω	0Ω	INF	0Ω	INF	INF
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▪ MEASURED FROM 140V SOURCE.
† MEASURED FROM 365V SOURCE.
‡ MEASURED FROM PIN 3 OF V13.

NC NO CONNECTION
TP TIE POINT



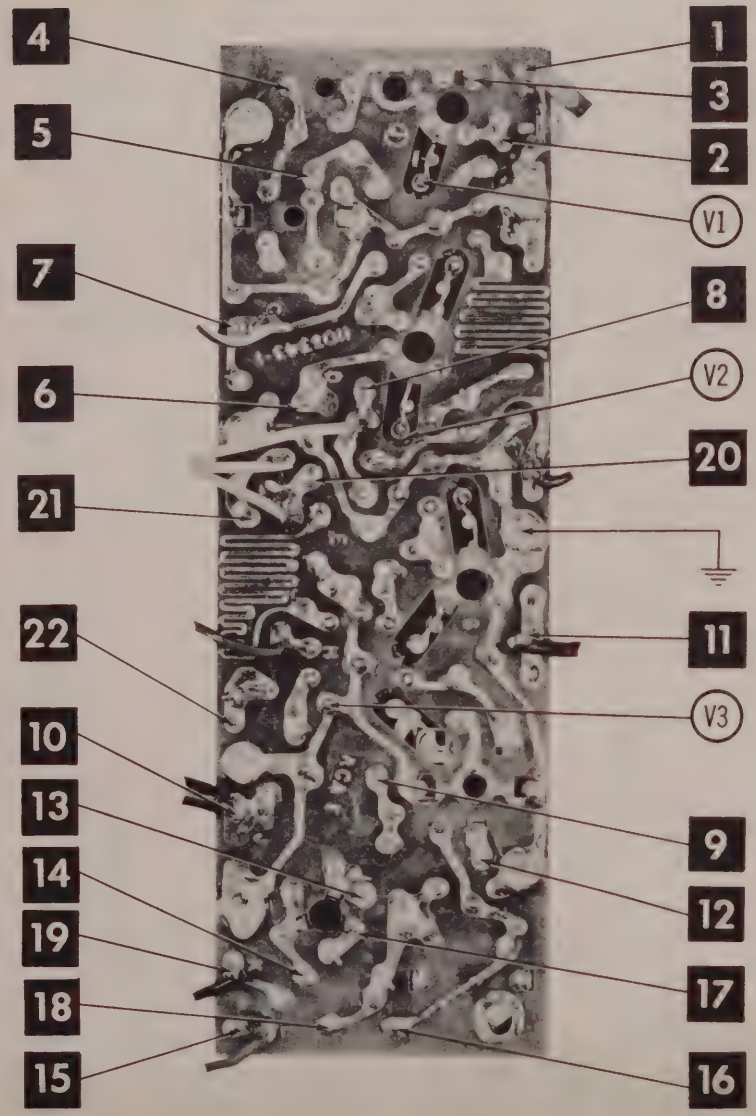
TOP VIEW



TUBE PLACEMENT CHART

SET 433 FOLDER 2

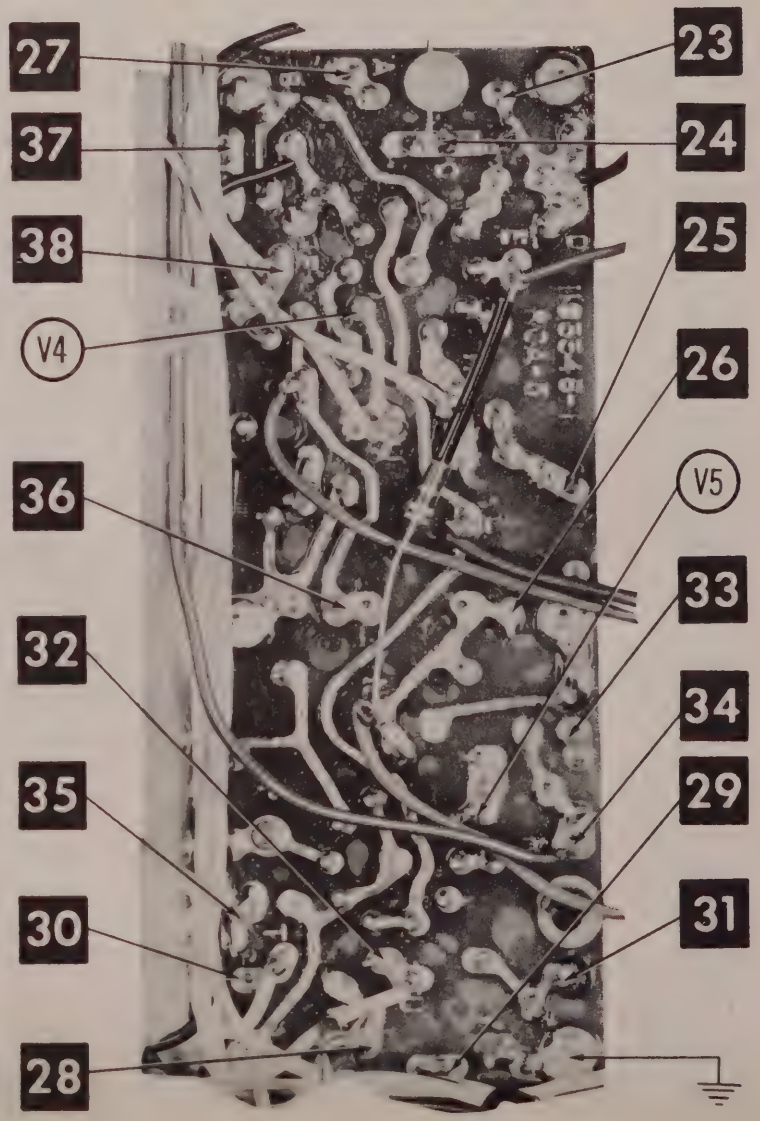
CircuiTrace Numbers 1 thru 22



A Howard W. Sams CIRCUITRACE® Photo

VIDEO IF
PRINTED BOARD

CircuiTrace Numbers 23 thru 38



VIDEO & AGC
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

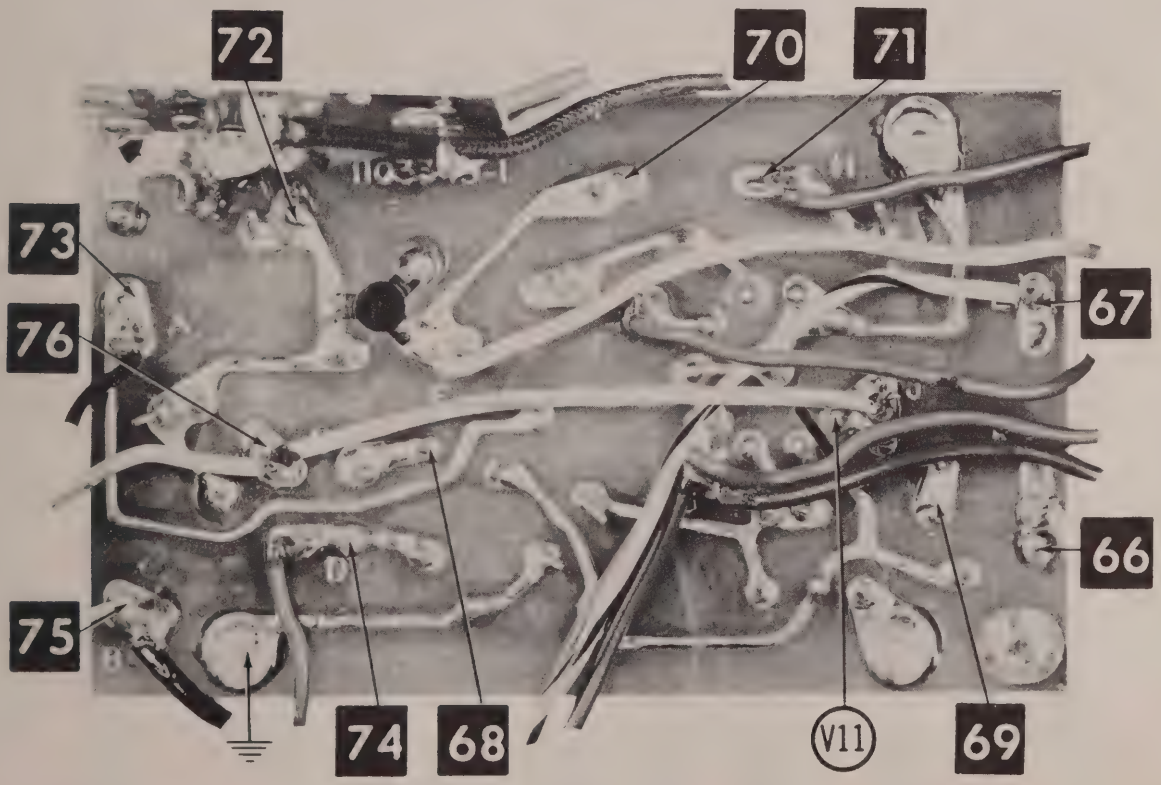
CircuiTrace Numbers 49 thru 65

A Howard W. Sams CIRCUITRACE* Photo

SYNC & VERT
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

CircuiTrace Numbers 66 thru 76



A Howard W. Sams CIRCUITRACE* Photo

HORIZ PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

REMOTE CONTROL
PARTS LIST AND DESCRIPTIONS

CTP6A

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st 40KC Amp.	6CB6	
V2	2nd 40KC Amp.	6AU6	
V3	3rd 40KC Amp. -Motor Reverse Det.	6AW8A	
V4	Tint Relay Control-Motor Reverse Relay Control	5965	
V5	Color Relay Control-Brightness Relay Control	5965	

ITEM No.	USE	TYPE	NOTES
V6	Vol. Relay Control-Fine Tuning Relay Control	5965	
V7	Channel Relay Control-Off-On Relay Control	5965	
V8	Motor Reverse Amp. -AGC Det. -AGC Clamper	6AV6	
V9	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	20	300	106833	AFH3-28	C0220	FP319.8	TMT-28	T-100	
B	▪20	300							
C	▲20	300							
C2	5	150	106839	SRE150V5	BBR4-150	TT150X5	TD-4-150	MMT-1505	TVA-1403

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	.1	400	106110	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C4	470		104380	BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C5	10000		73960	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C6	10000		73960	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C7	150		106840		DTN-150		CN7-315	5TCU-T15S 5% *	N750 5%
C8	.1	400	106110	P488N-1		CUB4P1	GEM-401	4TM-P1	
C9	10000			BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C10	.1	400	106110	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C11	100		105674	N750-D1 100	DTN-100	C10T1U	CN7-310	5TCU-T1S 10% *	N750 10%
C12	68		104224	NPO-S1 68	D6-680	CTA6Q68C	CNO-468	5TCC-Q68S 10% *	10%
C13	.1	400	106185	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C14	.1	400	106185	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C15	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C16	.1	400	106185					4TM-P1S 10% *	10%
C17	5600		104495	BPD-0056	DD-562		B-256	5HK-D56S *	
C18	.1	200	106374	P288N-1		CUB2P1	GEM-201	2TM-P1	
C19	5600		104495	BPD-0056	DD-562		B-256	5HK-D56S *	
C20	.01	400	106185		D6-103		GEM-1611	4TM-S1 S 10% *	
C21	.1	200	104374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C22	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C23	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C24	.22	400	106375	P488N-22		CUB4P22	GEM-4022	4TM-P22	
C25	.22	400	106375	P488N-22		CUB4P22	GEM-4022	4TM-P22	
C26	.22	400	106375	P488N-22		CUB4P22	GEM-4022	4TM-P22	
C27	220								N1500 5% ①
C28	2200		106838	1464-0022		1R5D22		MS-322	5%
C29	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C30	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C31	220								N1500 5% ①
C32	2200		106838	1464-0022		1R5D22		MS-322	5%
C33	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C34	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C35	220								N1500 5% ①
C36	2200		106838	1464-0022		1R5D22		MS-322	5%
C37	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C38	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C39	220								N1500 5% ①
C40	2200		106838	1464-0022		1R5D22		MS-322	5%
C41	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C42	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C43	220								N1500 5% ①
C44	2200		106838	1464-0022		1R5D22		MS-322	5%
C45	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C46	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C47	220								N1500 5% ①
C48	2200		106838	1464-0022		1R5D22		MS-322	5%
C49	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C50	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C51	220								N1500 5% ①
C52	2200		106838	1464-0022		1R5D22		MS-322	5%
C53	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C54	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C55	.1	200	106374	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C56	.1	400	106110	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	

* Not normally in distributors stock. Available thru distributor on order to manufacturer.
① Some versions may use 330mmf 5% N3300 in this application (Part #106837).

REMOTE CONTROL
PARTS LIST AND DESCRIPTIONS (Continued)
CTP6A
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	105211	BX-69	B47-1meg-S	B11-137	TA16L	Tint
B	Shaft			Not Req.	Not Req.	TM-1	Not Req.	
R2A	1meg	½	105211	BX-69	B47-1meg-S	B11-137	TA16L	Color
B	Shaft			Not Req.	Not Req.	TM-1	Not Req.	
R3A	1meg	½	105211	BX-69	B47-1meg-S	B11-137	TA16L	Brightness
B	Shaft			Not Req.	Not Req.	TM-1	Not Req.	
R4A	1meg	½	105211	BX-69	B47-1meg-S	B11-137	TA16L	Volume
B	Shaft			Not Req.	Not Req.	TM-1	Not Req.	
R5A	1meg	½	105211	BX-69	B47-1meg-S	B11-137	TA16L	Fine Tuning
B	Shaft			Not Req.	Not Req.	TM-1	Not Req.	
R6A	1meg	½	105211	BX-69	B47-1meg-S	B11-137	TA16L	Channel
B	Shaft			Not Req.	Not Req.	TM-1	Not Req.	
R7A	1meg	½	105211	BX-69	B47-1meg-S	B11-137	TA16L	On-Off
B	Shaft			Not Req.	Not Req.	TM-1	Not Req.	
R8A	1meg	½	105211	BX-69	B47-1meg-S	B11-137	TA16L	Noise
B	Shaft			Not Req.	Not Req.	TM-1	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		RCA Victor PART No.	NOTES
	OHMS	WATT		
R9	1meg			
R10	1meg			
R11	1meg			
R12	150K			
R13	150Ω			
R14	150Ω			
R15	1000Ω			
R16	330K			
R17	150K			
R18	150Ω			
R19	330K			
R20	150Ω			
R21	3900Ω	1		
R22	1000Ω			
R23	82K			
R24	47K			
R25	10K	1		
R26	100Ω			
R27	150K			
R28	1.5meg			Note 1
R29	1meg			
R30	3.3meg			
R31	150K			
R32	22meg 5%			
R33	47K			
R34	10meg			
R35	1meg			
R36	1.2meg			
R37	1meg			
R38	3.3meg			
R39	1meg			

ITEM No.	RATING		RCA Victor PART No.	NOTES
	OHMS	WATT		
R40	2200Ω	1		
R41	15K	2		
R42	4.7Ω	4		
R43	22Ω			
R44	22Ω			
R45	22Ω			
R46	470K			
R47	1meg			
R48	1meg			
R49	470K			
R50	1meg			
R51	1meg			
R52	470K			
R53	1meg			
R54	1meg			
R55	470K			
R56	1meg			
R57	1meg			
R58	470K			
R59	1meg			
R60	1meg			
R61	470K			
R62	1meg			
R63	1meg			
R64	470K			
R65	1meg			
R66	1meg			
R67	4700Ω	2		
R68	560Ω	2		
R69	500Ω Cold		100118	
R70	15Ω			

Note 1. Some versions may use 1.2meg in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		RCA-Victor PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	1st 40KC Amp. Coil	106853					
L2	2nd 40KC Amp. Trans.	106836					
L3	40KC Output Trans.	106854					
L4	35.75KC Coil	106846					
L5	37.0KC Coil	106847					
L6	38.25KC Coil	106848					
L7	39.5KC Coil	106849					
L8	40.75KC Coil	106850					
L9	42.0KC Coil	106851					
L10	43.25KC Coil	106852					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	RCA-Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .4A	400 VCT @ .030A	45V @ .00067A Tap @ 6.3V @ 4A	106832						

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	RCA-Victor PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.00067A	106951 ①			2S1 ①		① Selenium Type
M2		106952 ①					
M3		106952 ①					
M4		106952 ①					
M5		106952 ①					
M6		106952 ①					
M7		106952 ①					
M8		106952 ①					
M9		106952 ①					

REMOTE CONTROL
PARTS LIST AND DESCRIPTIONS (Continued)

CTP6A

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			RCA - Victor PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M10	1½" Length of #28 Copper Wire.							

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M11	Lamp		#47
M12	Relay	106834	SPDT, Motor Reverse
M13	Relay	106835	SPDT, Tint
M14	Relay	106835	SPDT, Color
M15	Relay	106835	SPDT, Brightness
M16	Relay	106835	SPDT, Volume
M17	Relay	106835	SPDT, Fine Tuning
M18	Relay	106835	SPDT, Channel
M19	Relay	106835	SPDT, Off-On
M20	Relay	106834	SPDT, Motor Forward
	Microphone	106586	Transducer Models 21RC8975, 7, & U, 21RC8985, 7, & U
	Microphone	106862	Transducer Models 21RC8995, 6, & U

CRK1A

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N408	Oscillator		2N408		2N408	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C51	40	3	106947	PWE3040	NL40-3	TT3X40	ML40-6		TE-1057

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C58	13-100								
C59	13-100		106932						
C60	8-50								N750
C61	13-100								
C62	8-50		106931						N750
C63	8-50								N750
C64	430		106944			5R5T43		MS-343	5%
C65	360		106938	1469-00036		5R5T36		MS-336	5%
C66	270		106939	1469-00027		5R5T27		MS-327	5%
C67	200		106940	1469-00020		22R5T2	MCE237	MS-32	5%
C68	120		106941	1469-00012		22R5T12		MS-312	5%
C69	62		106942	1469-000068		22R5Q62		MS-462	10%
C70	39		106733	1469-000039		22R5Q39		MS-439	10%
C71	.047	50	106946					2WF-S47	10%
C72	.047	50	106946					2WF-S47	10%
C73	430		106944			5R5T43		MS-343	5%
C74	330		106945					5GA-T33S 5% *	5%
C75	470		76992	1464-00047		5R5T47		MS-347	10%
C76	470		106943	1464-00047		5R5T47		MS-347	5%
C77	220		96518	1469-00022		22R5T22		MS-322	10%

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		RCA Victor PART No.	NOTES
	OHMS	WATT		
R71	2200Ω 5%			
R72	750Ω 5%			
R73	390Ω 5%			

ITEM No.	RATING		RCA Victor PART No.	NOTES
	OHMS	WATT		
R74	270Ω 5%			
R75	10meg			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		RCA-Victor PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L11	Osc. Coil	106948					Tapped ⓐ .1Ω & .3Ω

REMOTE CONTROL
PARTS LIST AND DESCRIPTIONS (Continued)

CRK1A

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	RCA-Victor PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M21		106949 ①					
M22		106949 ①					

BATTERIES

ITEM No.	VOLTAGE	RCA-Victor PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M23	6.5						TR-165R①		①Mercury Type

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M24	Switch	106934	Circuit Board, Remote Control Transmitter
M25	Transducer	106930	

REMOTE CONTROL
ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

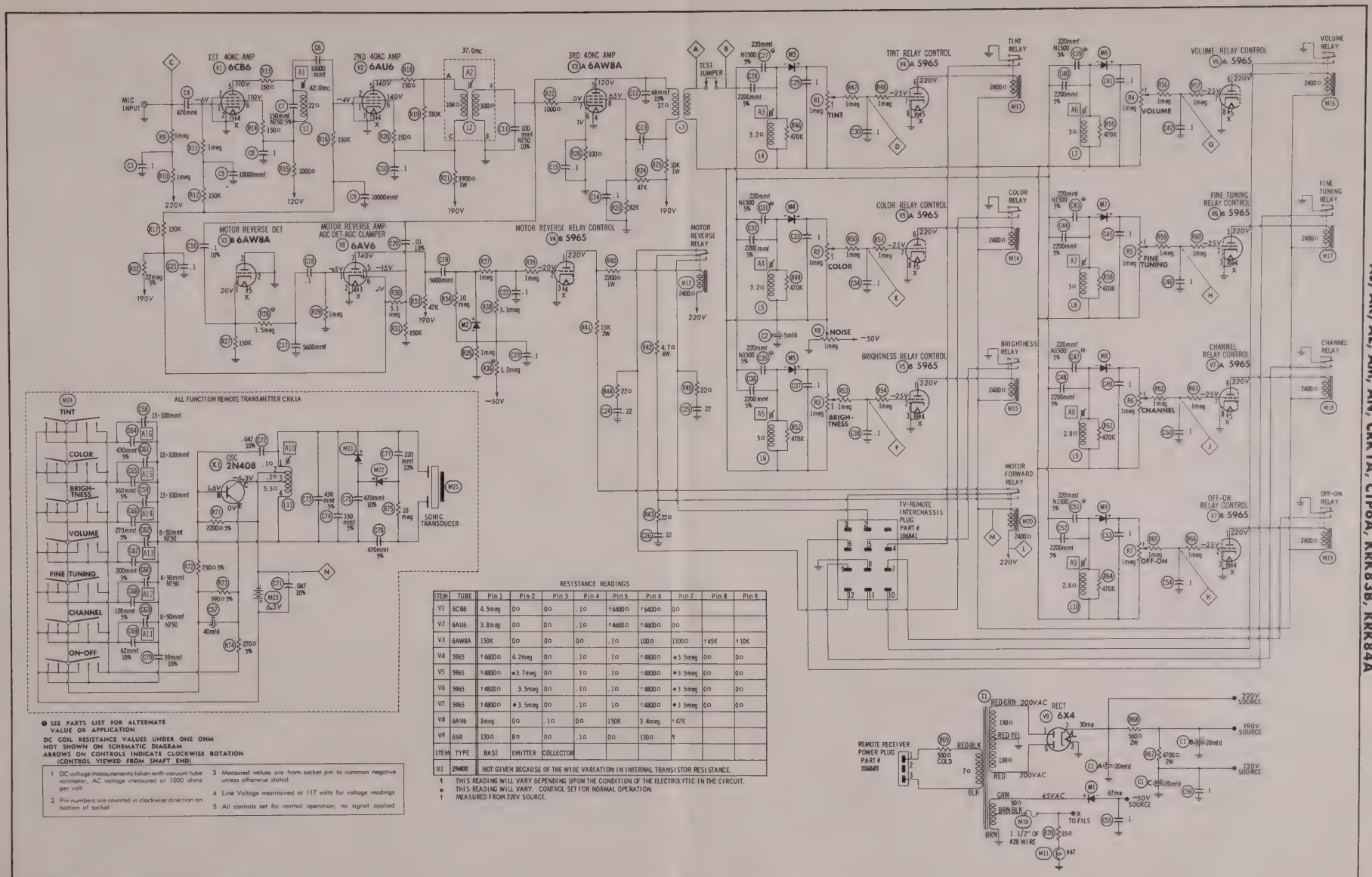
Suggested Alignment Tools: A1, A3 thru A15 .... GENERAL CEMENT #9440
A2 ..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

REMOTE CONTROL RECEIVER ALIGNMENT FOR CTP6A

Connect the negative lead of a 5 volt bias supply to pin 6 (plate) of the 6AV6 (V8). Positive to chassis. Turn all controls (R1 thru R7) fully clockwise. Turn Noise control (R8) fully counterclockwise. Open test jumper between points Ⓐ and Ⓑ. When performing steps 4 thru 10 note in which step the highest negative voltage is obtained after the minimum is reached. This will be important for steps 11 and 12.
Use only enough generator output to provide a usable indication on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	1500mmf Ceramic Capacitor	High side to point Ⓒ. Low side to chassis.	42.0KC (Unmod)		DC probe to pin 5 (plate) of 6AV6 (V8). Common to chassis. (Use negative scale)	A1	Adjust for maximum negative voltage on meter. Set generator output for -15 volts on meter when finally peaked.
2.	"	"	37.0KC		"	A2	Adjust for maximum negative reading on meter. DO NOT change generator level. Reading should be -15 to ±2 volts.
3.	"	"	35.75KC		DC probe to pin 6 (plate) of 6AV6 (V8). Common to chassis.		Remove bias from pin 6 of V8. Set generator output to provide a reading on meter of -6 volts. Leave generator at this setting. Reconnect jumper between points Ⓐ and Ⓑ.
4.	"	"	"		DC probe to point Ⓓ. Common to chassis.	A3	Adjust for MINIMUM negative reading.
5.	"	"	37.0KC		DC probe to point Ⓔ. Common to chassis.	A4	"
6.	"	"	38.25KC		DC probe to point Ⓕ. Common to chassis.	A5	"
7.	"	"	39.5 KC		DC probe to point Ⓖ. Common to chassis.	A6	"
8.	"	"	40.75KC		DC probe to point Ⓗ. Common to chassis.	A7	"
9.	"	"	42.0KC		DC probe to point Ⓙ. Common to chassis.	A8	"
10.	"	"	43.25KC		DC probe to point Ⓚ. Common to chassis.	A9	"
11.	"	"	Use freq. of step above which resulted in highest negative voltage.		DC probe to point Ⓛ. Common to point Ⓜ.	R8	Adjust the Noise control (R8) for 20 volt reading on meter.
12.	"	"	35.75KC 37.0KC 38.25KC 39.5KC 40.75KC 42.0KC 43.25KC		"	R1 R2 R3 R4 R5 R6 R7	Adjust each Drive control (except the one corresponding to frequency used in step 11) for 20 volt reading on meter.
13.	"	"	35.75KC		DC probe to center arm of Tint control (R1). Common to chassis.	R8	Remove 5965 (V4). Adjust Noise control (R8) for +8 volts on meter. Replace V4.

continued PAGE 28



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt

2 Pin numbers are counted in clockwise direction on bottom of socket

3 Measured values are from socket pin to common negative unless otherwise stated

4 Line Voltage maintained at 117 volts for voltage readings

5 All controls set for normal operation; no signal applied

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CB6	4.5meg	0Ω	0Ω	.1Ω	†6400Ω	†6400Ω	0Ω		
V2	6AU6	3.8meg	0Ω	0Ω	.1Ω	†4600Ω	†4600Ω	0Ω		
V3	6AW8A	150K	0Ω	0Ω	0Ω	.1Ω	100Ω	1300Ω	†45K	†10K
V4	5965	†4600Ω	4.2meg	0Ω	.1Ω	.1Ω	†4800Ω	●3.5meg	0Ω	0Ω
V5	5965	†4800Ω	●3.7meg	0Ω	.1Ω	.1Ω	†4800Ω	●3.5meg	0Ω	0Ω
V6	5965	†4800Ω	3.5meg	0Ω	.1Ω	.1Ω	†4800Ω	●3.5meg	0Ω	0Ω
V7	5965	†4800Ω	●3.5meg	0Ω	.1Ω	1Ω	†4800Ω	●3.5meg	0Ω	0Ω
V8	6AV6	1meg	0Ω	1Ω	0Ω	150K	3.4meg	†47K		
V9	6X4	130Ω	8Ω	0Ω	.1Ω	0Ω	130Ω	¶		
ITEM	TYPE	BASE	EMITTER	COLLECTOR						
X1	2N408	NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.								

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.

● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

† MEASURED FROM 220V SOURCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

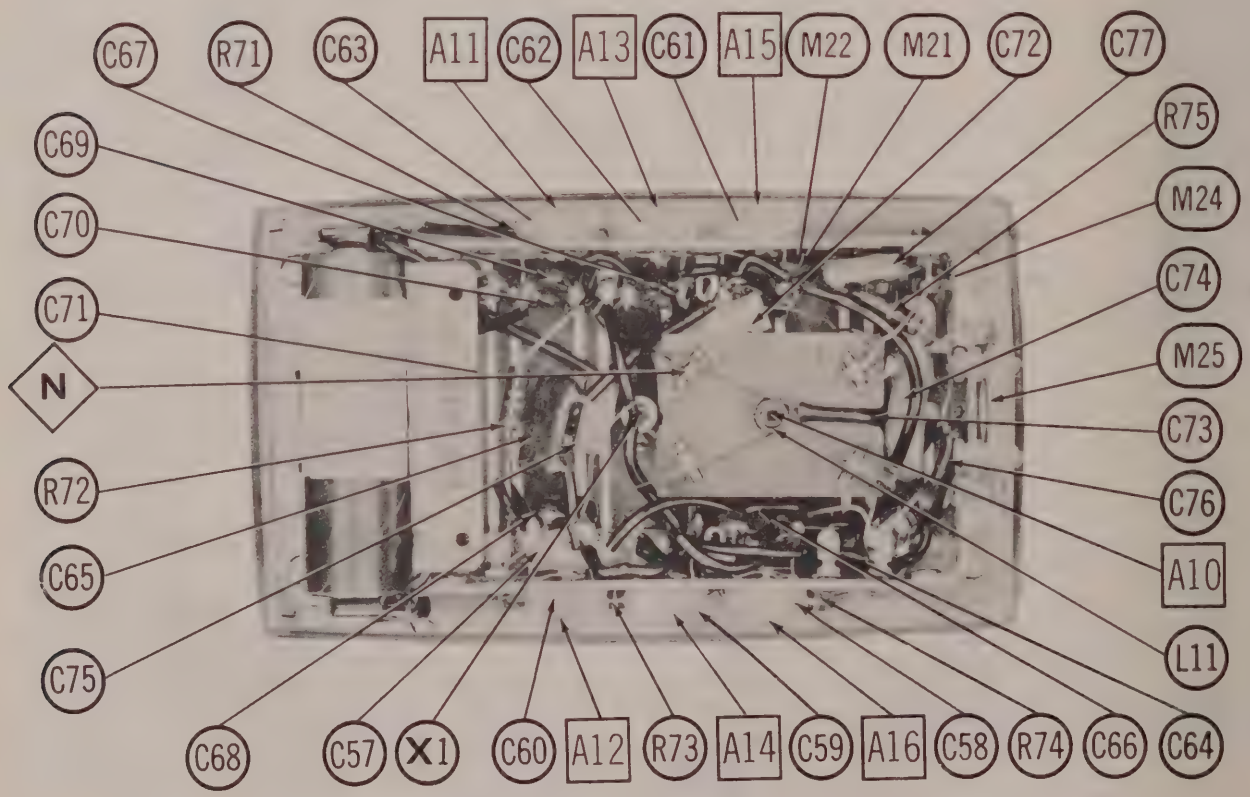
© Howard W. Sams & Co., Inc. 1959

REMOTE RECEIVER CTP6A, REMOTE TRANSMITTER CRK1A

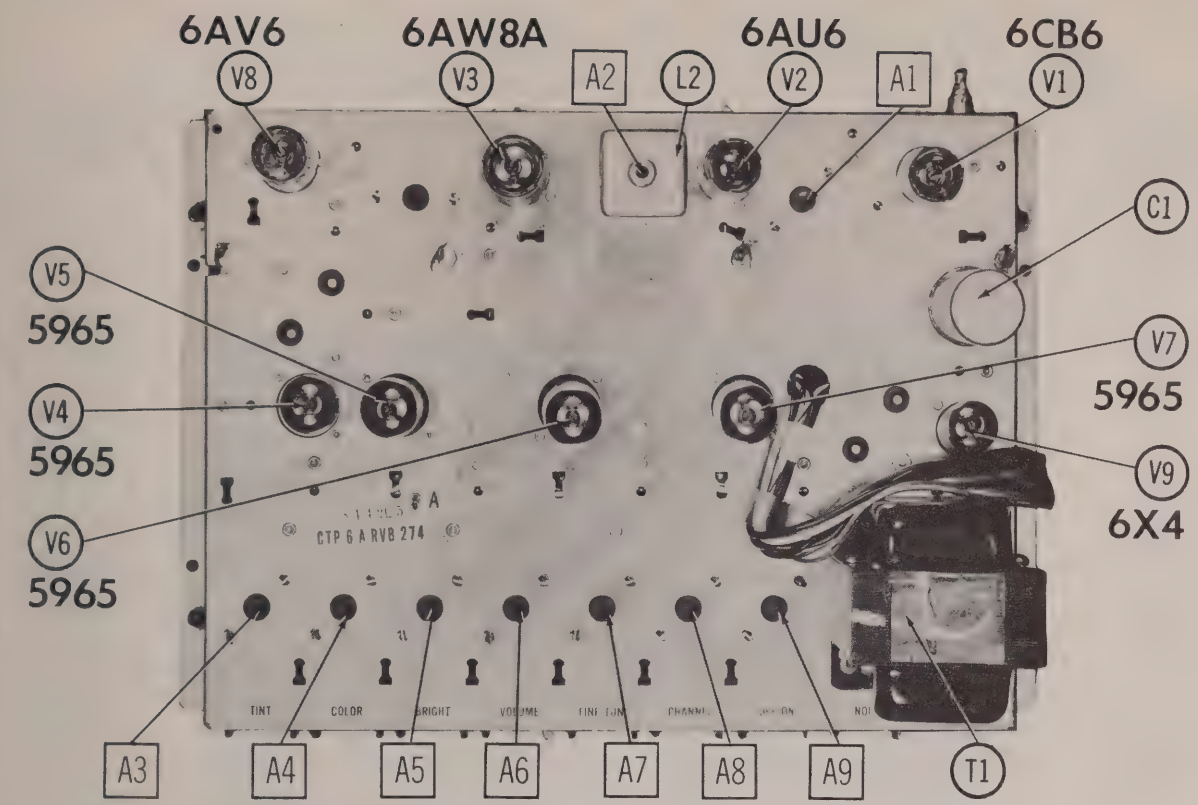
REMOTE CONTROL
ALIGNMENT INSTRUCTIONS (cont)

REMOTE CONTROL TRANSMITTER ALIGNMENT FOR CRK1A

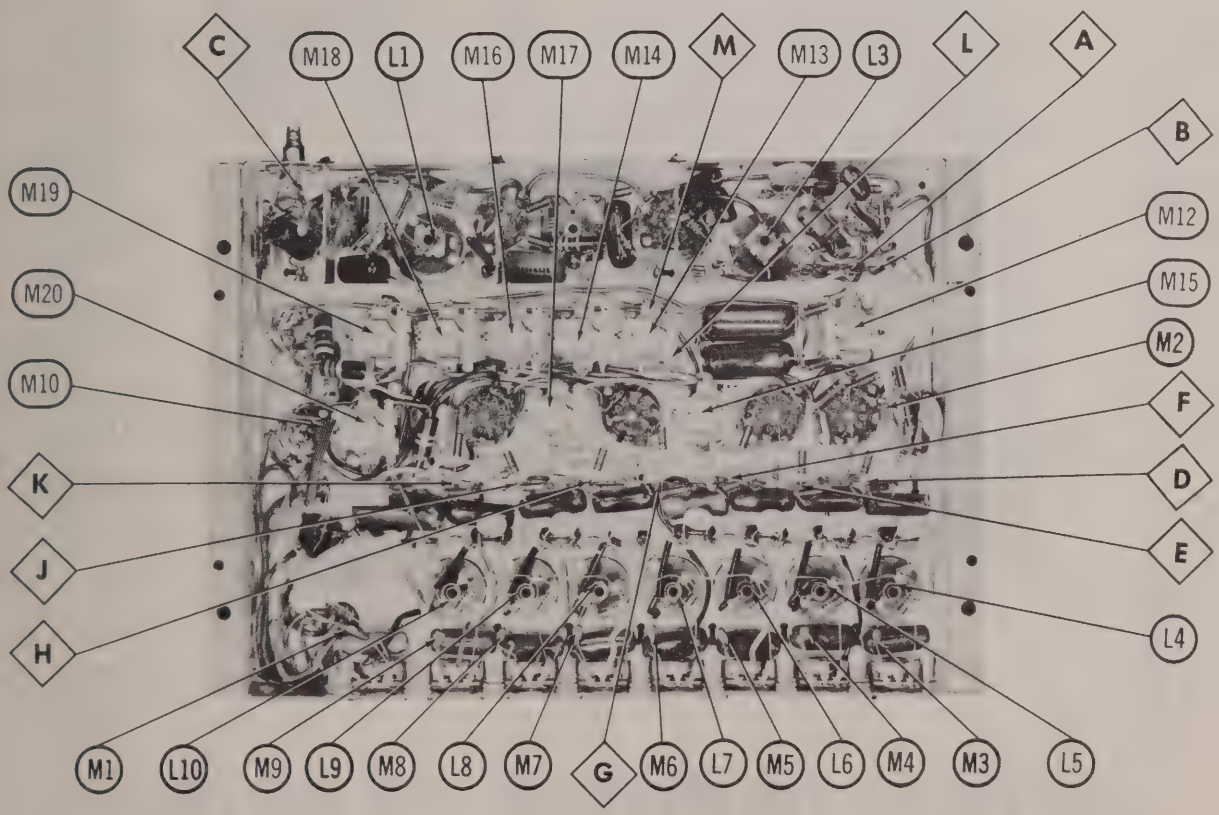
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	1500mmf Ceramic Capacitor	High side to Vert. Amp. of scope. Low side to scope.	43.25KC (Unmod) (Depress "Off" button)		Vert. Amp. to terminal 2 of L11. Low side to terminal 1.	A10	Adjust for zero beat on scope. Release button and depress opposite button and check for blocking on scope pattern.
15.	"	"	42.0KC (Depress left "Channel" button)		"	A11	"
16.	"	"	40.75KC (Depress left "Fine Tuning" button		"	A12	"
17.	"	"	39.5KC (Depress left "Volume" button)		"	A13	"
18.	"	"	38.25KC (Depress left "Bright" button)		"	A14	"
19.	"	"	37.0KC (Depress left "Color" button)		"	A15	"
20.	"	"	35.75KC (Depress left "Tint" button)		"	A16	"



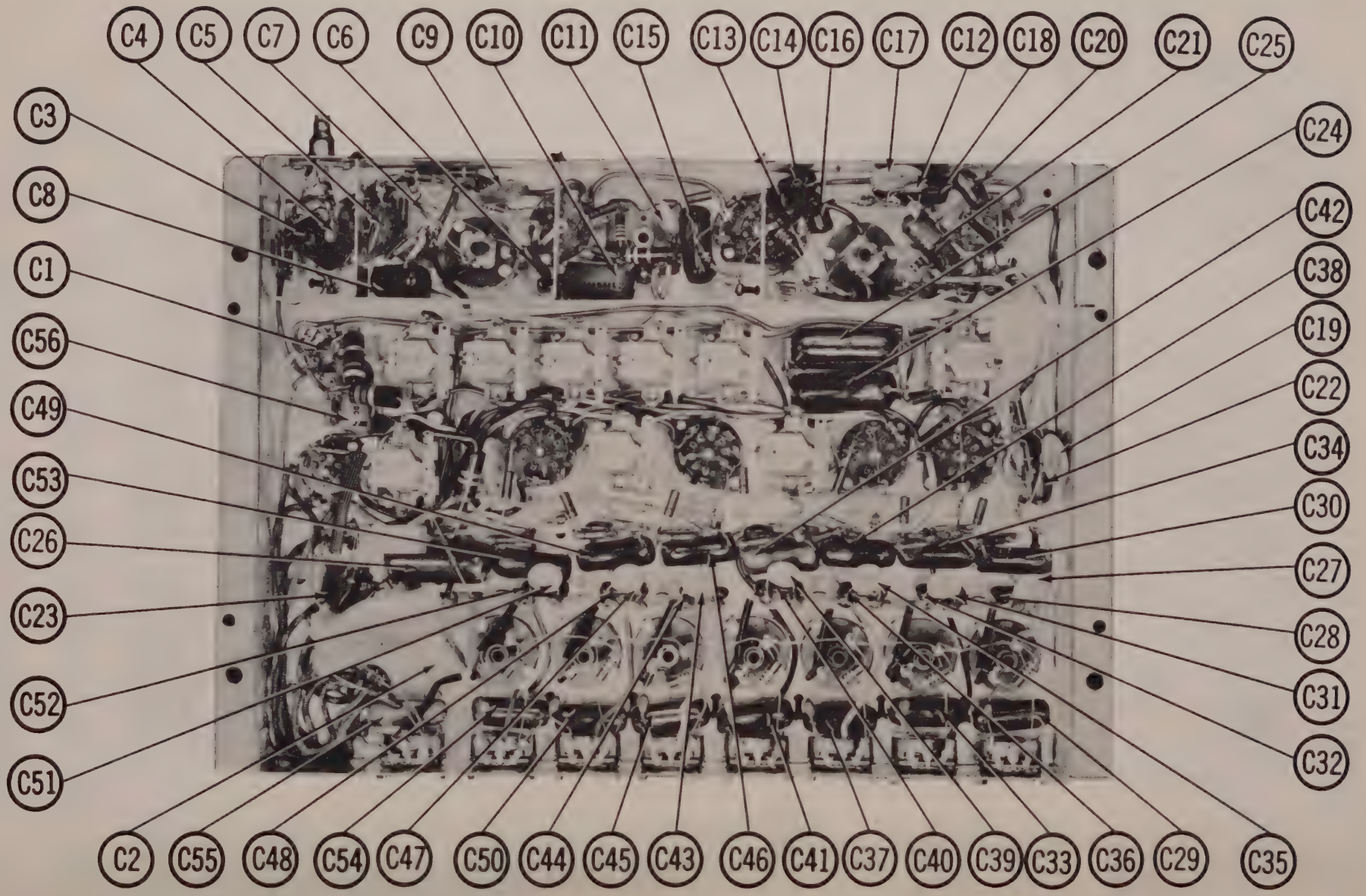
2N408



REMOTE RECEIVER CTP6A - TOP VIEW



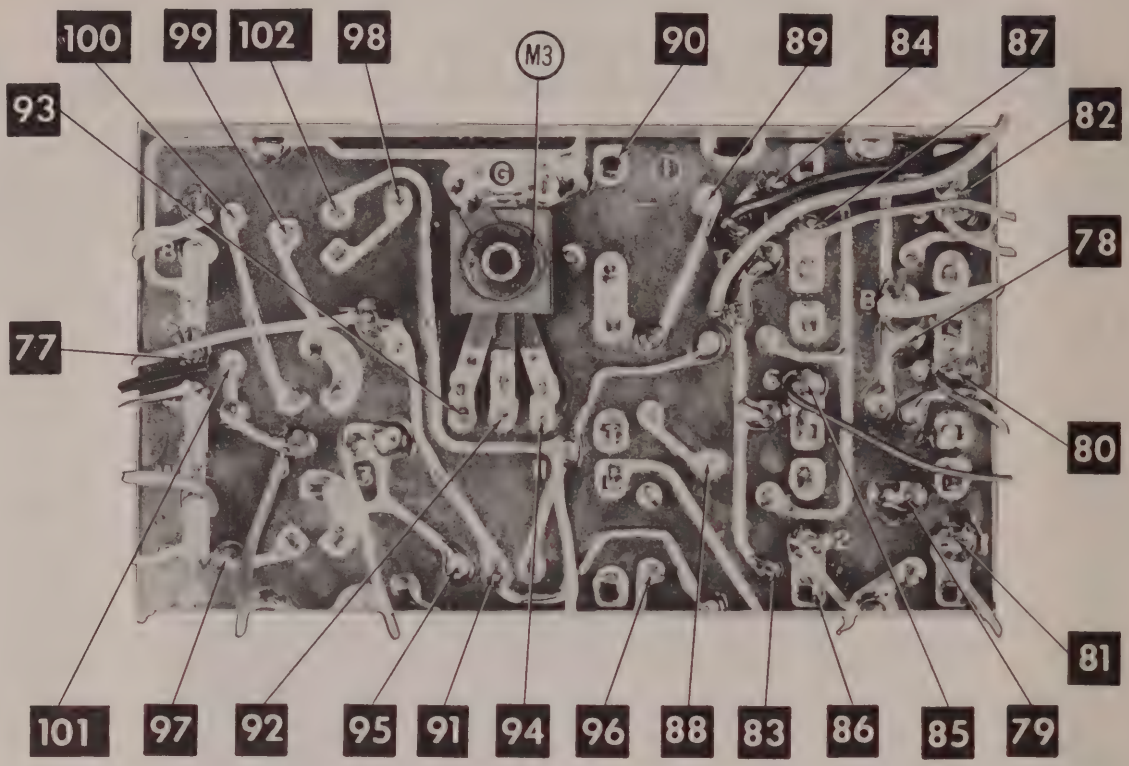
REMOTE RECEIVER CTP6A - ALIGN, COIL & MISC



REMOTE RECEIVER CTP6A BOTTOM VIEW - CAPACITOR IDENTIFICATION

REMOTE RECEIVER CTP6A BOTTOM VIEW - RESISTOR IDENTIFICATION

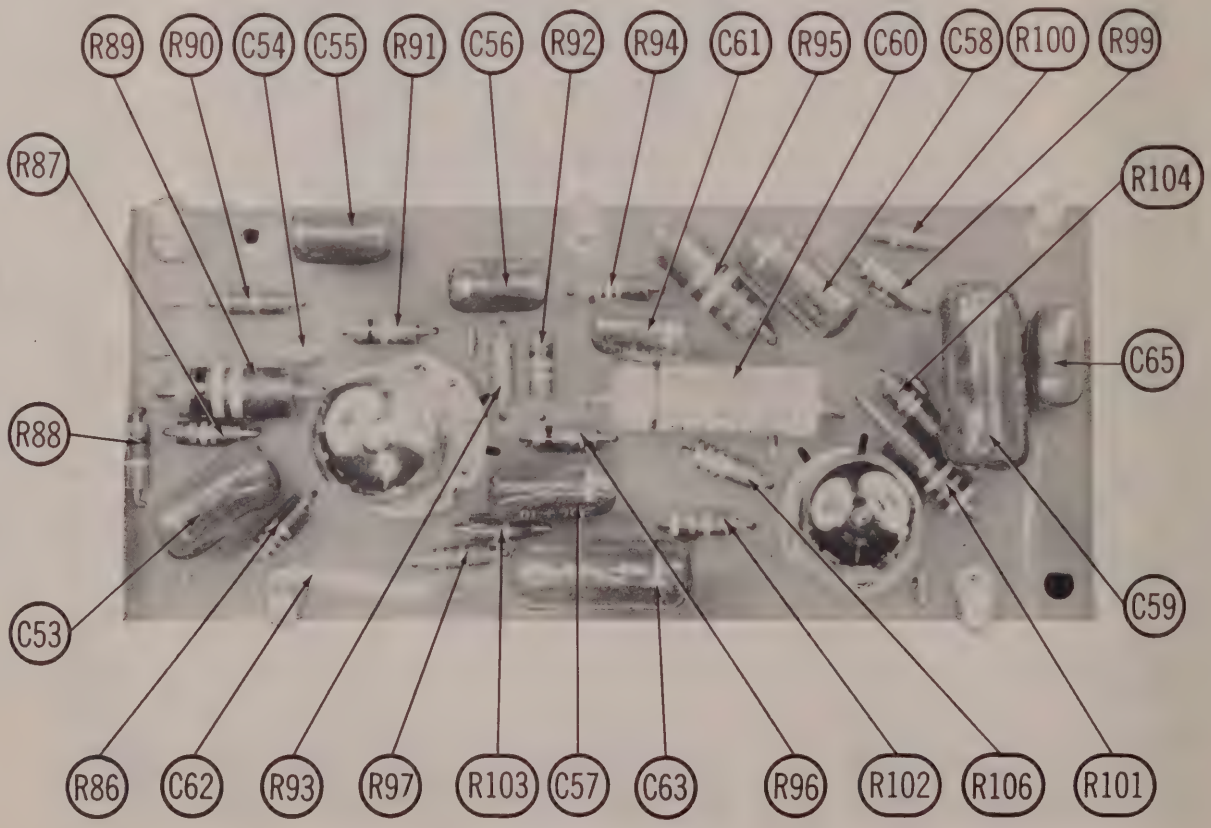
CircuiTrace Numbers 77 thru 102



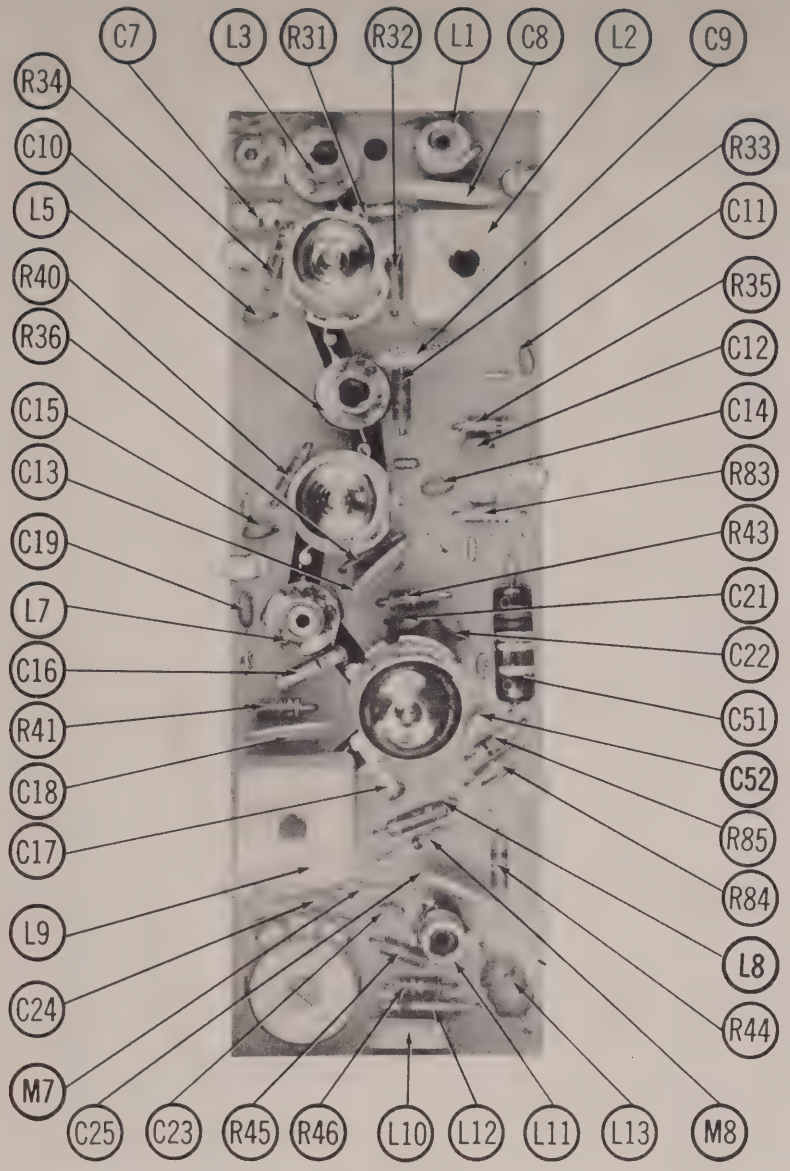
A Howard W. Sams CIRCUITRACE® Photo

CONVERGENCE PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



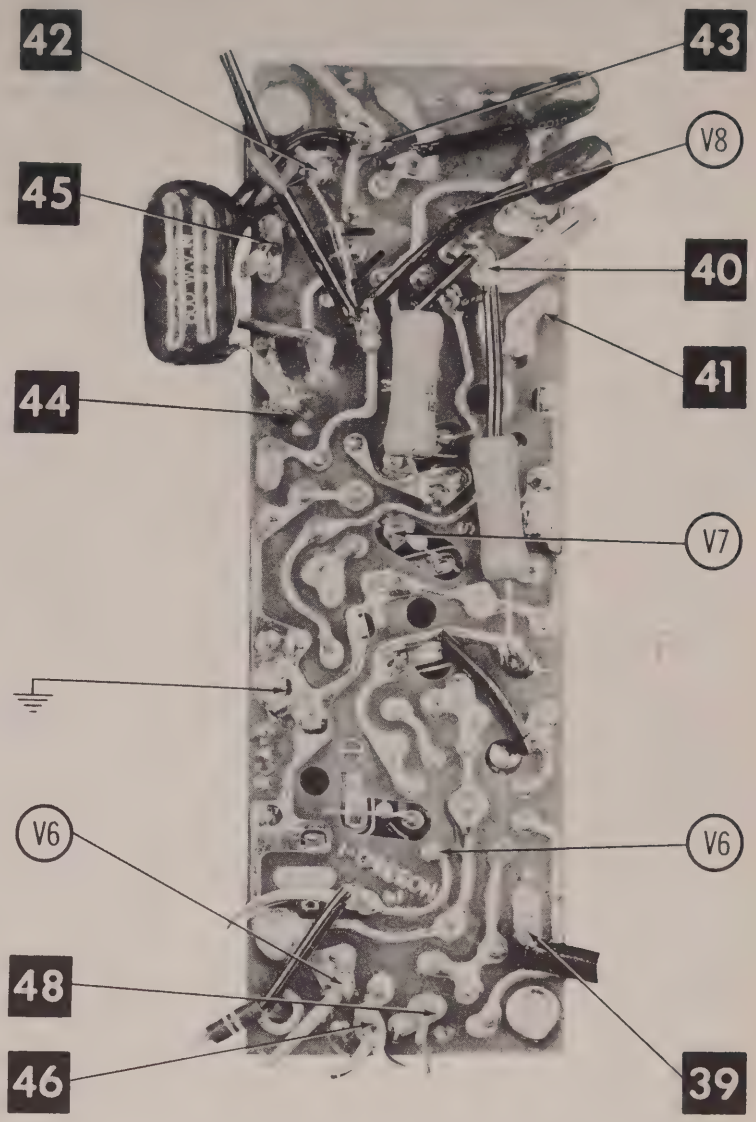
VERT & SYNC PRINTED BOARD



A Howard W. Sams CIRCUITRACE® Photo

VIDEO IF PRINTED BOARD

CircuiTrace Numbers 39 thru 48

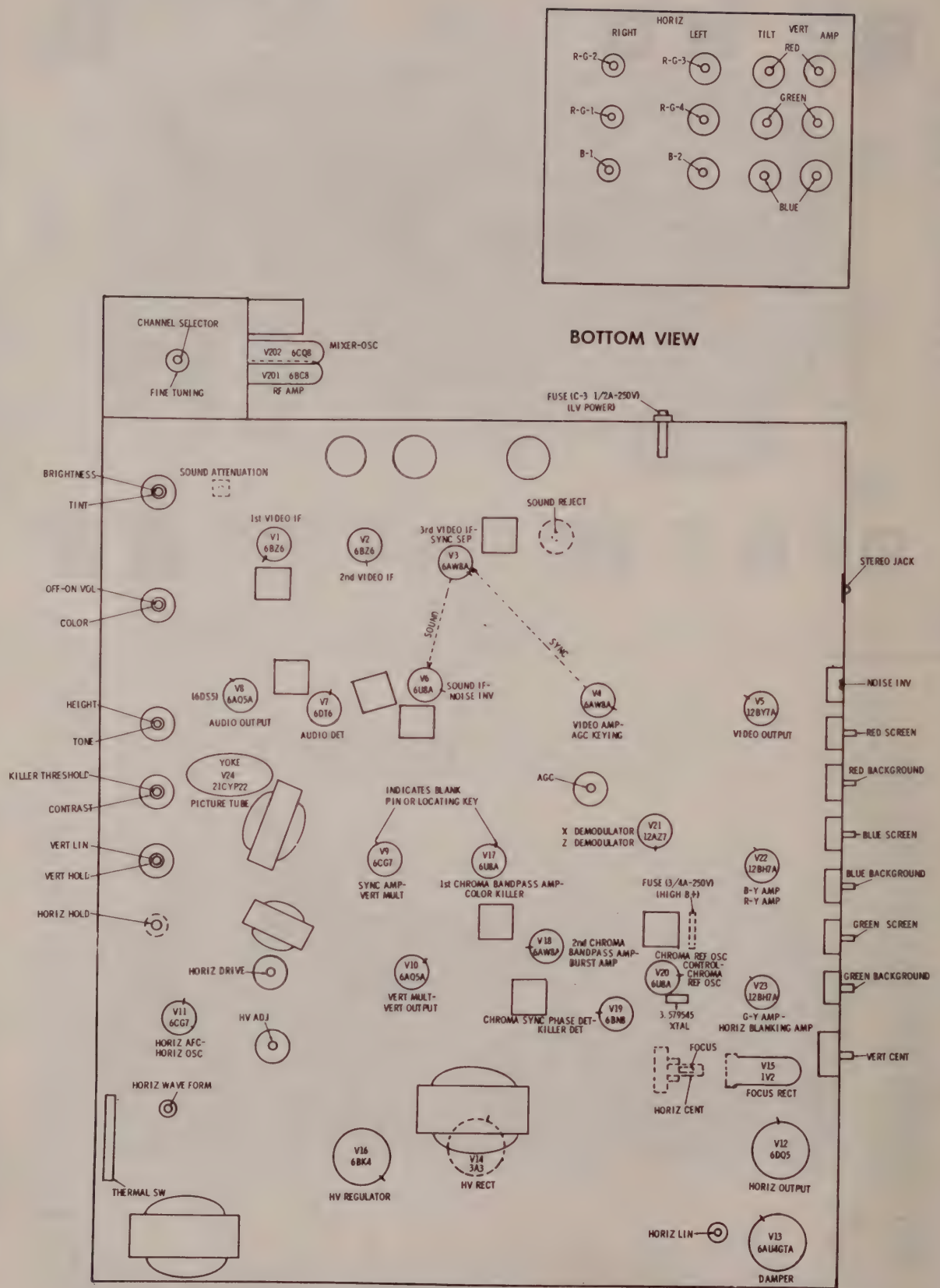


NOISE INV, SOUND PRINTED BOARD

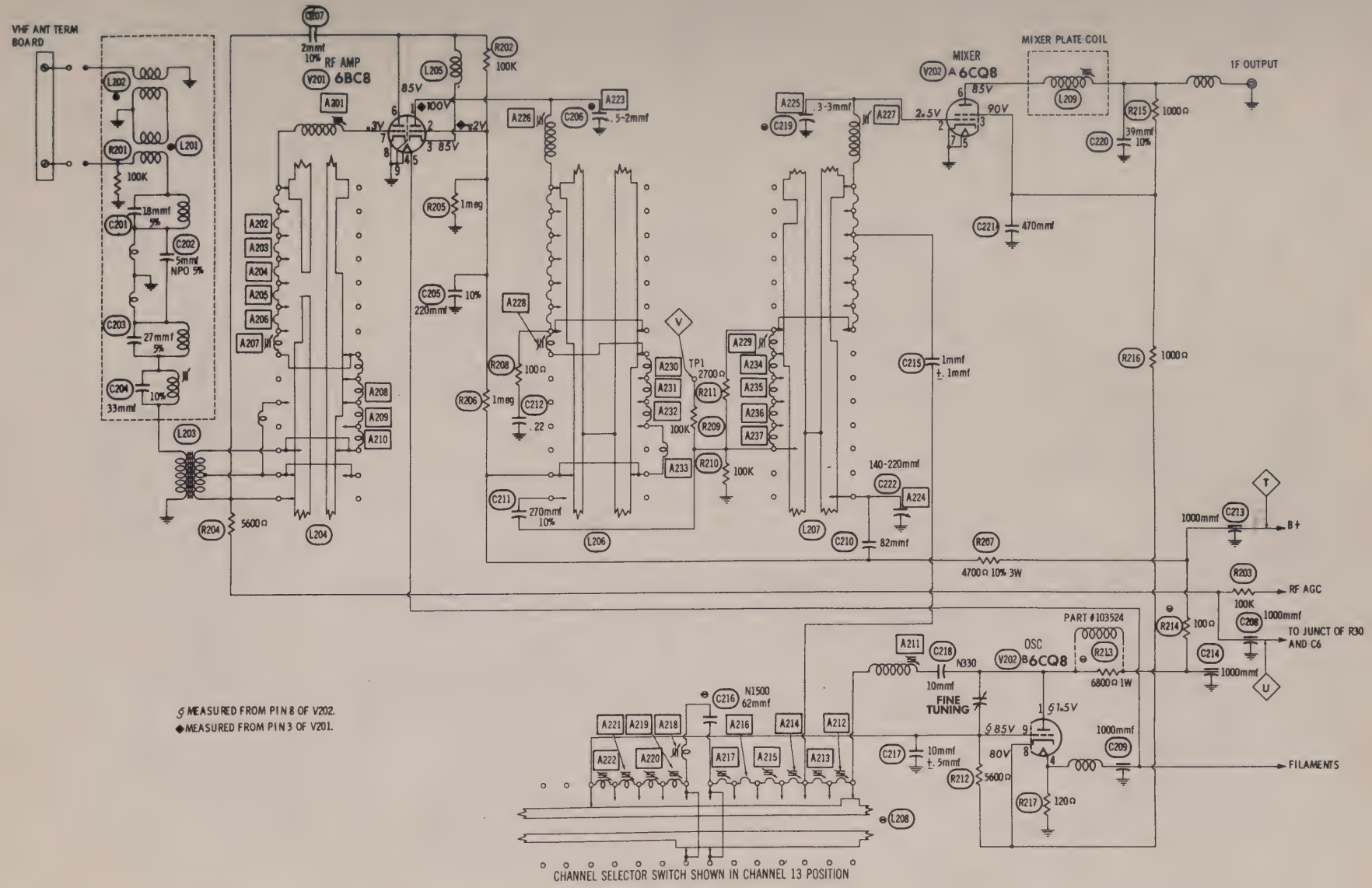
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

RCA VICTOR CHASSIS CTC7AA, AB, AC, AD, AE, AF, AH, AJ, AK, AL, AM, AN, CRK1A, CTP6A, KRK83B, KRK84A

FOLDER 2



TUBE PLACEMENT CHART



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

VHF TUNER KRK 48B, C, KRK75A, B

RCA VICTOR CHASSIS CTC7AA, AB, AC, AD, AE, AF, AH, AJ, AK, AL, AM, AN, CRK1A, CTP6A, KRK83B, KRK84A

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS FOR TUNERS KRK48B, C, KRK75A, B

Allow a 20 minute warm-up period for the receiver and test equipment.
Disable the Horizontal Sweep Circuit by removing the 3/4A fuse and connecting a 1500Ω 100 watt resistor between hot side of fuse holder and chassis.
Connect a short jumper between tuner AGC terminal and chassis.
Suggested alignment tools: A201, A223 thru A229 ..... General Cement #5000, 5003, 5009, 8290
Walsco #2520, 2523, 2525, 2537
A211 thru A222 ..... General Cement #5009, 8195, 8274, 8275, 8728, 8987
Walsco #2531

ANTENNA INPUT ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Remove tuner B+ at point (T).

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across antenna terminals thru pad (Fig. 201).	207MC	205.25MC 209.75MC	12	Vert. Amp. to point (U). Low side to chassis.	A201	Adjust A201 for response similar to Fig. 202.
2.	"	"	201MC	199.25MC 203.75MC	11	"	A202	"
3.	"	"	195MC	193.25MC 197.75MC	10	"	A203	"
4.	"	"	189MC	187.25MC 191.75MC	9	"	A204	"
5.	"	"	183MC	181.25MC 185.75MC	8	"	A205	"
6.	"	"	177MC	175.25MC 179.75MC	7	"	A206	"
7.	"	"	79MC	77.25MC 81.75MC	5	"	A207	
8.	"	"	69MC	67.25MC 71.75MC	4	"	A208	"
9.	"	"	63MC	61.25MC 65.75MC	3	"	A209	"
10.	"	"	57MC	55.25MC 59.75MC	2	"	A210	Adjust A201 for response similar to Fig. 202. Reconnect tuner B+ at point (T).

VHF OSCILLATOR ALIGNMENT

Set the Fine Tuning to the center of its range.
Use only enough generator output to provide a usable indication on VTVM.
Unplug cable from IF output jack. Connect .001mfd in sereis with 39Ω across IF output jack.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	257MC	13	Vert. Amp. to point (V). Low side to chassis.	A211	Adjust for zero beat on scope.
			251MC	12		A212	
			245MC	11		A213	
			239MC	10		A214	
			233MC	9		A215	
			227MC	8		A216	
			221MC	7		A217	
			129MC	6		A218	
			123MC	5		A219	
			113MC	4		A220	
			107MC	3		A221	
			101MC	2		A222	

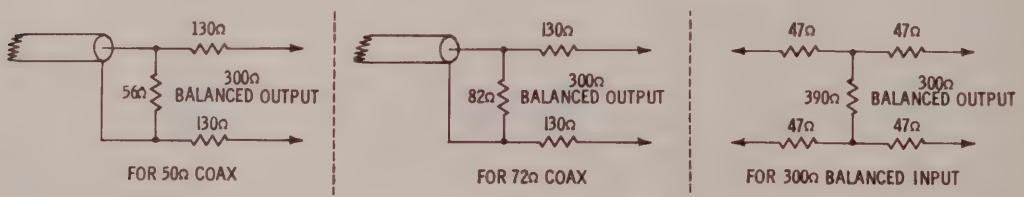


FIG. 201

TUNER ALIGNMENT INSTRUCTIONS (cont)

VHF RF AND MIXER ALIGNMENT

Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Fig. 201	Across antenna terminals thru pad (Fig. 201).	183MC	181.25MC 185.75MC	8	Vert. Amp. to point ◇V◇. Low side to chassis.	A223, A224, A225	Adjust for response similar to Fig. 203. Adjust A223 to place markers on curve, A225 for proper tilt and A224 for bandwidth.
13.	"	"	213MC	211.25MC 215.75MC	13	"	A226, A227, A224	Adjust for response similar to Fig. 203. Adjust A226 to place markers on curve, A227 for proper tilt and A224 for bandwidth. Temporarily remove signal generator connection and check oscillator injection voltage (Meter should read -1.5 to -5 volts) if outside limits. Replace V202 and repeat steps 12 and 13.
14.	"	"	85MC	83.25MC 87.75MC	6	"	A228, A229	Adjust for response similar to Fig. 203. Adjust A228 to place markers on curve, A229 for proper tilt. Check response on channels 5 thru 2. If response is not in limits proceed with steps 15 thru 18.
15.	"	"	79MC	77.25MC 81.75MC	5	"	A230, A231	Adjust for response similar to Fig. 203. Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
16.	"	"	69MC	67.25MC 71.75MC	4	"	A232, A233	"
17.	"	"	63MC	61.25MC 65.75MC	3	"	A234, A235	"
18.	"	"	57MC	55.25MC 59.75MC	2	"	A236, A237	"

UHF ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

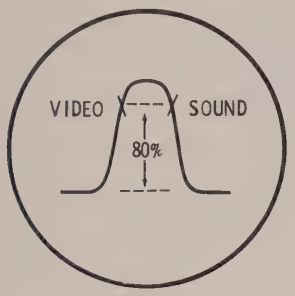


FIG. 202A

FIG. 202B

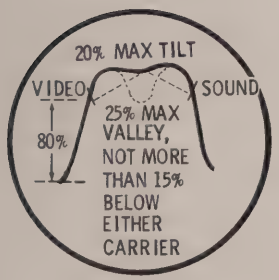


FIG. 203A

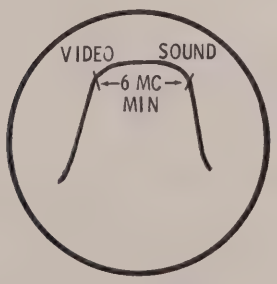


FIG. 203B

FIG. 203C

TUNER PARTS LIST AND DESCRIPTIONS

KRK48B,C KRK75A,B

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6BC8	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6CQ8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	18		102646		TCZ-18		CNO-418		5%
C202	5		102571						NPO 5%
C203	27		100352		TCZ-27		CNO-427		5%
C204	33		102573	NPO-SI 33	D6-330	C10Q33C	ZT-5433		10%
C205	220		100672	NPO-DI 220	D6-221	C10T22U	JL-322		10%
C206	.5-2		103554						①
C207	2		78047	NPO-SI 2		C10V2C			10%
C208	1000		103517	EF-001	MFT-1000			503C-DI	
C209	1000		105660	EF-001	MFT-1000			503C-DI	
C210	82		103560	1469-000082	TCZ-82	22A5Q82		MS-482	10%
C211	270		77838	NPO-SI 270	D6-271	C10T27U			10%
C212	.22		105857						
C213	1000		103517	EF-001	MFT-1000			503C-DI	
C214	1000		105660	EF-001	MFT-1000			503C-DI	
C215	1.0		105781						±.1mmf
C216	62		106743						N750 ②
C217	10		76350	NPO-SI 10	TCZ-10				±.5mmf
C218	10		106046						N330
C219	.3-3		103552						①
C220	39		104931	NPO-DI 39	DD-390	L10Q39	CNO-439		10%
C221	470		78622	DI-470	DD-471	L10T47	B-347	5GA-T47	
C222	140-200		103519						

① Tuners KRK48C, KRK75A, B use .34-3mmf in this application (Part #105757).
② Some versions of KRK48B use 68mmf N1500 (Part #105855). Tuner KRK48C uses 47mmf N1500 (Part #102882).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		RCA Victor PART No.	NOTES
	OHMS	WATT		
R201	100K			
R202	100K			
R203	100K			
R204	5600Ω			
R205	1meg			
R206	1meg			
R207	4700Ω 10%	3	104835	
R208	100Ω			
R209	100K			

ITEM No.	RATING		RCA Victor PART No.	NOTES
	OHMS	WATT		
R210	100K			
R211	2700Ω			
R212	5600Ω			
R213	6800Ω	1		Note 1
R214	100Ω			Note 2
R215	1000Ω			
R216	1000Ω			
R217	120Ω			

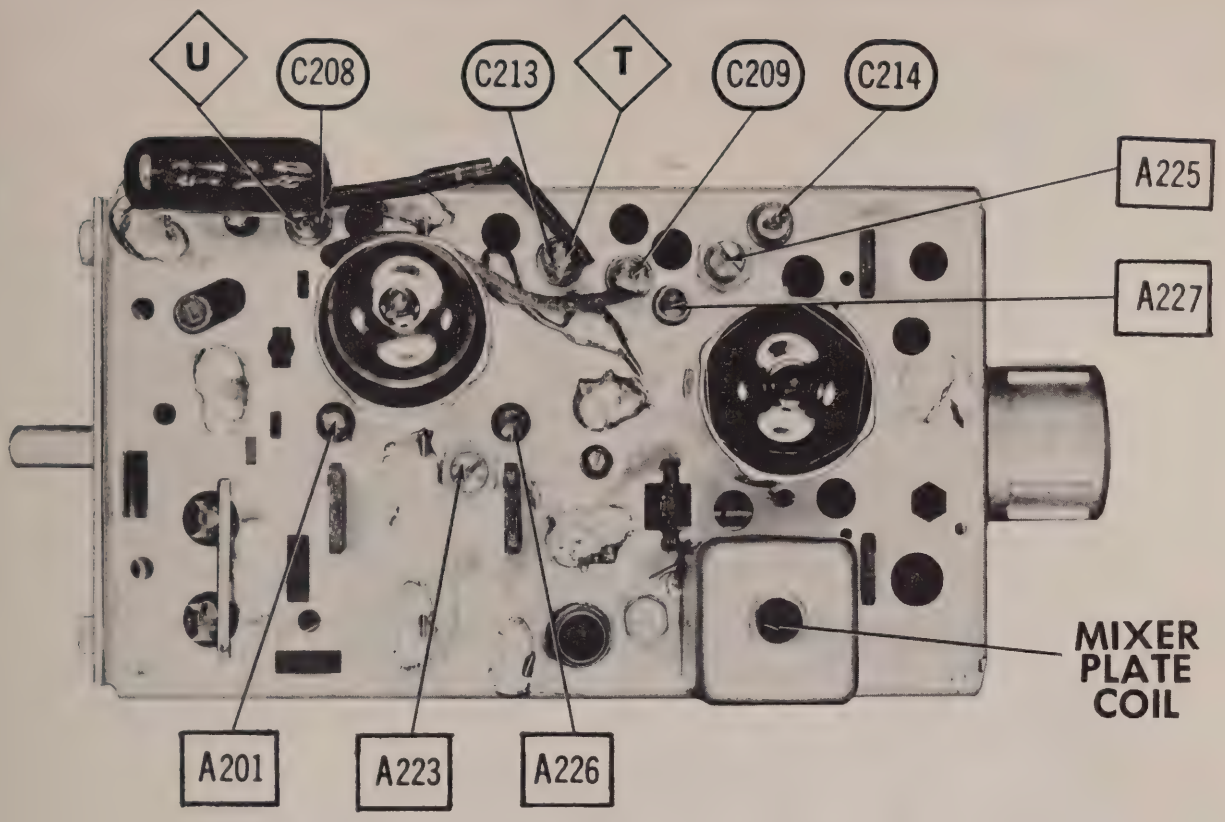
Note 1. Tuner KRK75A, B use 4700Ω ½ W in this application.
Note 2. Tuner KRK75A, B use 3300Ω ½ W in this application.

COILS (RF-IF)

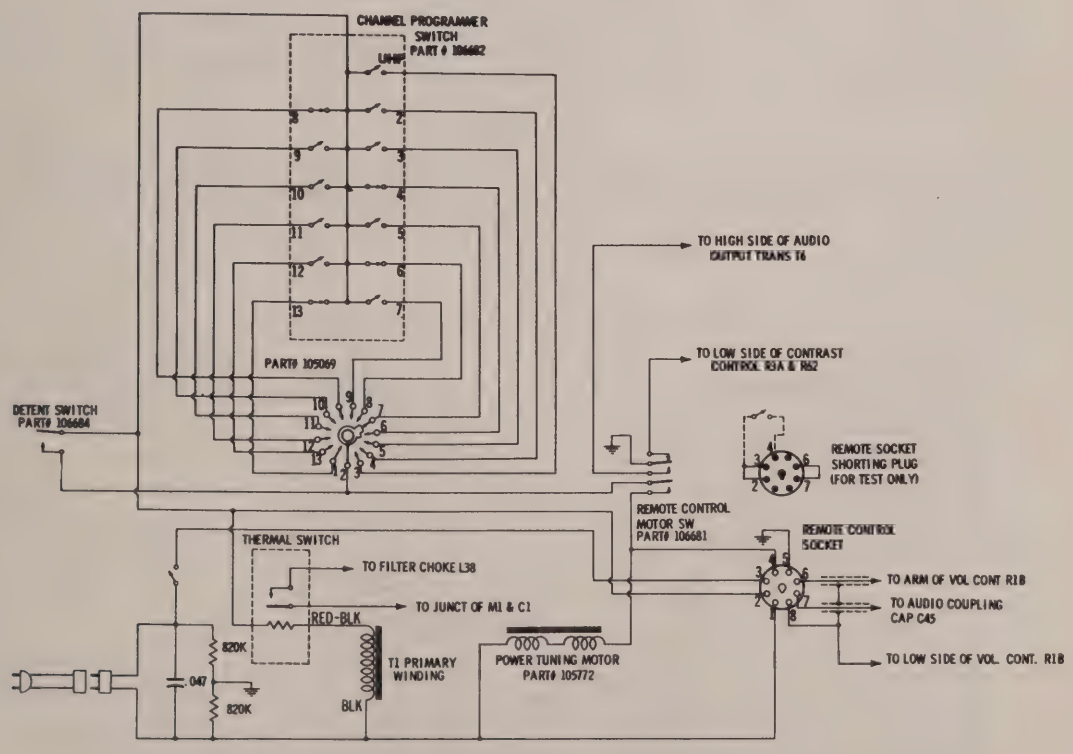
ITEM No.	USE	RCA Victor PART No.	NOTES
L201	Ant. Matching Trans.	102576 ①	
L202	"	102576 ①	
L203	Ant. Trans.	104937	
L204	Ant. Coils	104941	Channel 2-13, Includes wafer assy.
L205	RF Choke	78562	
L206	RF Coils	104939	Channel 2-13, Includes wafer assy.

ITEM No.	USE	RCA Victor PART No.	NOTES
L207	Mixer Grid Coils	104940	Channel 2-13, Includes wafer assy.
L208	Osc. Coils	104938 ②	Channel 2-13, Includes wafer assy.
L209	Mixer Plate Coil	104943	

① Tuner KRK75A, B combine L201, L202 in Part #104936.
② Tuner KRK75A, B use Part #106490.



TUNER KRK 48B - TOP VIEW


CHANNEL PROGRAMMER SWITCH PART # 106682
UHF
PART# 105069
DETENT SWITCH PART# 106684
TO HIGH SIDE OF AUDIO OUTPUT TRANS T6
TO LOW SIDE OF CONTRAST CONTROL R3A & R62
REMOTE SOCKET SHORTING PLUG (FOR TEST ONLY)
REMOTE CONTROL MOTOR SW PART# 106681
REMOTE CONTROL SOCKET
THERMAL SWITCH
TO FILTER CHOKE L38
TO JUNCT OF M1 & C1
RED-BLK
820K
.047
820K
T1 PRIMARY WINDING
BLK
POWER TUNING MOTOR PART# 105772
TO ARM OF VOL CONT R1B
TO AUDIO COUPLING CAP C45
TO LOW SIDE OF VOL. CONT. R1B

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

AC INPUT & REMOTE CIRCUITS CH CTC7AE, AF, AH, AJ

SET 433 FOLDER 2

REMOTE CONTROL PARTS LIST AND DESCRIPTIONS

KRK 83B–84A

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st Hi Freq. Amp.	6CB6	
V2	2nd Hi Freq. Amp.	6AU6	
V3	3rd Hi Freq. Amp. - On-Off Relay Control	6CG7	
V4	Det. - 1st Low Freq. Rect.	6AL5	
V5	1st Low Freq. Amp. - Noise Amp. -Cathode Follower	6AN8	
V6	Noise Rectifier - 2nd Low Freq. Rectifier - 3rd Low Freq. Rectifier	6BN8	
V7	Sound Relay Control - Channel Relay Control	6CG7	
V8	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲20	350	106745	AFH3-127-10	C0800	FP227	TMD-35	D-160	TVLS-3635. 2*
B	■20	350				TC29	TD-50-25	MT-0250	
C	50	25							

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.1	400	106110					5BF-P10	10%
C3	.1	400	106110					5BF-P10	10%
C4	.22	200	106354				GEM-2022	2WF-P22	10%
C5	.047	200	106107					2WF-S47	10%
C6	.1	400	106110					5BF-P10	10%
C7	.22	200	106354				GEM-2022	2WF-P22	10%
C8	.1	400	106110					5BF-P10	10%
C9	.22	200	106354				GEM-2022	2WF-P22	10%
C10	4700		106547	DI 4700		1R5D47	JL-247	MS-247	10%
C11	560		105248	DI 560	MD-561	1R5T56	JL-356	MS-356	10%
C12	180		102562	DI 180	DD-181	L10T18		MS-318	10%
C13	2200		104899	DI 2200		1R5D22	JL-222	MS-222	10%
C14	.1	400	106110					5BF-P10	10%
C15	180		102562	DI 180	DD-181	L10T18		MS-318	10%
C16	470		102230	DI 470	MD-471	5R5T47	JL-347	MS-347	10%
C17	1500		104890	DI 1500		1R5D15	JL-215	MS-215	10%
C18	4700		106547	DI 4700		1R5D47	JL-247	MS-247	10%
C19	.015	200	106548					2WF-S15	10%
C20	3900			1469-0039		1R5D39	JL-239	MS-239	10%
C21	.47	200	106107				GEM-2047	2WF-P47	10%
C22	.0047	600	106549					6TM-D47S 10% *	10%
C23	2200			DI 2200		1R5D22	JL-222	MS-222	10%
C24	.47	200					GEM-2047	2WF-P47	10%
C25	.0022	600	106550					6TM-D22S 10% *	10%
C26	2200			DI 2200		1R5D22	JL-222	MS-222	10%
C27	.33	200					GEM-2033	2WF-P33	10%
C28	.015	600	73797					6TM-S15S 10% *	10%

* Not normally in distributors stock. Available through distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	106744	AB-70	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			AK-19	RN-3	TQ	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	NOTES
R2	56K 5%			
R3	1000Ω 5%			
R4	3300Ω 5%			
R5	68K 5%			
R6	8200Ω 5%	1		
R7	180Ω 5%			
R8	1000Ω 5%			
R9	560K 5%			
R10	1meg 5%			
R11	3300Ω 5%			
R12	47K 5%			
R13	5600Ω 5%			
R14	1000Ω			
R15	560K 5%			
R16	150K 5%			
R17	27K 5%			
R18	1000Ω 5%			
R19	47K 5%			
R20	470K 5%			
R21	100K 5%			
R22	1meg 5%			
R23	100K 5%			
R24	270K 5%			
R25	1meg 5%			
R26	1meg 5%			
R27	8200Ω 5%	1		
R28	220Ω 5%			Note 1
R29	390Ω 5%			
R30	180K 5%			Note 2
R31	470K 5%			
R32	2. 2meg 5%			
R33	1meg 5%			
R34	2. 2meg 5%			
R35	2. 2meg 5%			
R36	1meg 5%			
R37	3. 3meg			
R38	330K 5%			
R39	2. 2meg 5%			
R40	1meg 5%			
R41	3. 3meg 5%			
R42	10K 5%			
R43	680Ω 5%	2		
R44	18Ω	1		Note 3
R45	5.1Ω Hot		106637	
R46	15Ω 5%			

Note 1. Some versions may use 68Ω in this application.
Note 2. Some versions may use 470K in this application.
Note 3. Some versions may use 33Ω 1W in this application.

REMOTE CONTROL PARTS LIST & DESCRIPTION (cont)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		RCA Victor PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	RF Choke	106842					
L2	1st Hi Freq. Trans.	106715					
L3	2nd Hi Freq. Trans.	106716					
L4	1st Low Freq. Rect.	106717					
L5	2nd Low Freq. Rect.	106717					
L6	3rd Low Freq. Rect.	106717					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .47A	280VCT @ .025A	6.3V @ 4A	106481						

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M1	Lamp		#47
M2	Switch	106478	Remote, On-Off (DPDT, Slide Type)
M3	Relay	106483	On-Off
M4	Relay	106483	Channel Selector
M5	Relay	106483	Sound
M6	Relay	106480	Latching (On-Off)
M7	Relay	106855	Latching (Sound)

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N407	Osc. #1		2N407	2N362	2N407	PNP
X2	2N407	Osc. #2		2N407	2N362	2N407	PNP
X3	2N407	Amplifier		2N407	2N362	2N407	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C29	20	15	106735	XPP-12050	NL20-15	TT15X20	ML20-15	MMT-0220	TE-1157

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C30	5-70		71496						
C31	39		103733	1469-000039	TCZ-39	22R5Q39		MS-439	10%
C32	820		106734	1464-00082		1R5T82		MS-382	
C33	.01	100	106736	P285N-01	D6-103	LT6S1		2WF-S10	
C34	5-70		71496						
C35	82		106291	1469-000082	DTZ-82	22R5Q82		MS-482	10%
C36	820		106734	1464-00082		1R5T82		MS-382	
C37	.01	100	106736	P285N-01	D6-103	LT6S1		2WF-S10	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		RCA Victor PART No.	NOTES
	OHMS	WATT		
R47	150K 5%			
R48	100Ω 5%			
R49	6800Ω 5%			
R50	150K 5%			

ITEM No.	RATING		RCA Victor PART No.	NOTES
	OHMS	WATT		
R51	100Ω 5%			
R52	6800Ω 5%			
R53	10Ω 5%			

COILS (RF-IF)

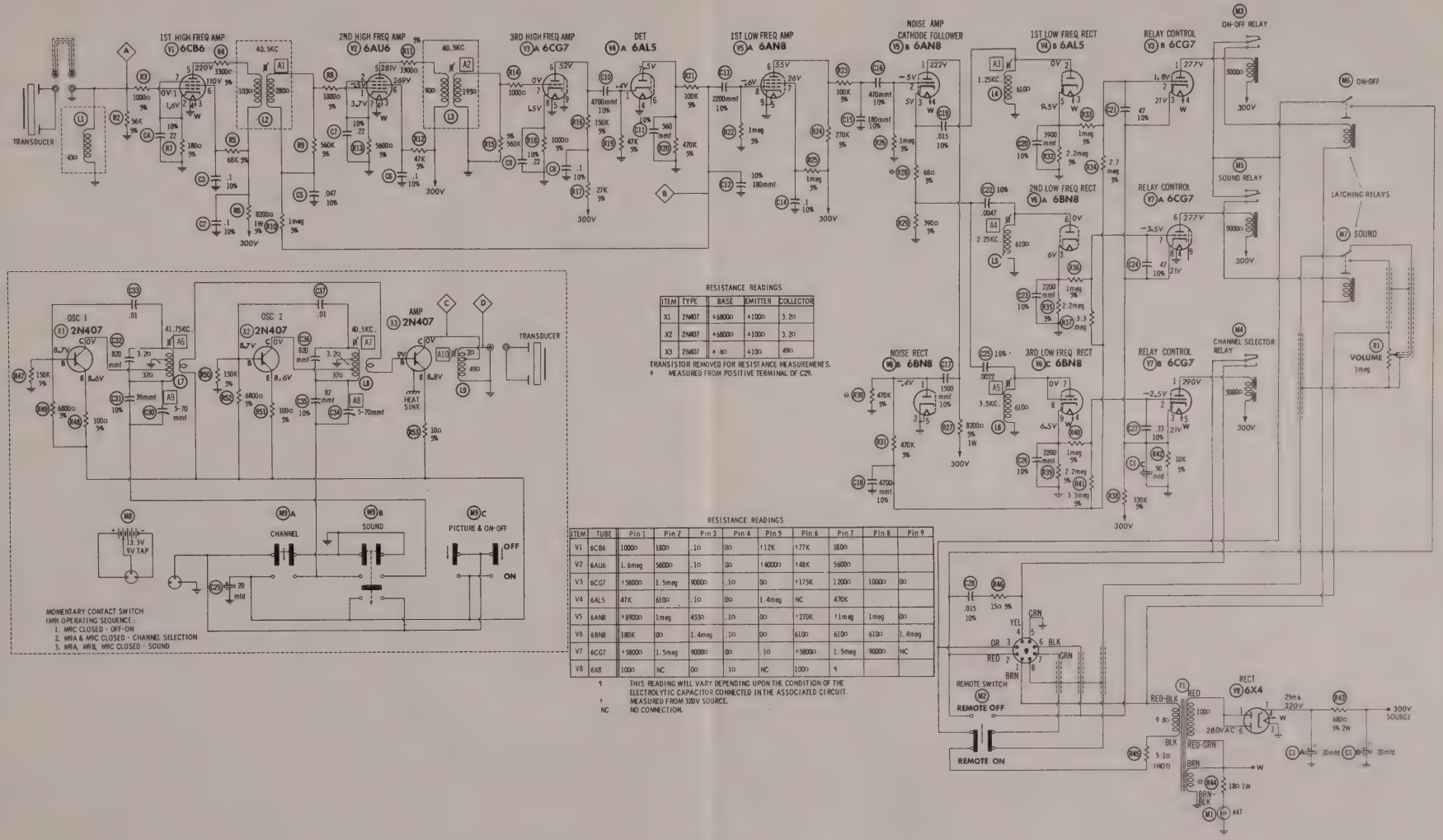
ITEM No.	USE	REPLACEMENT DATA					
		RCA Victor PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L7	41.75KC Osc. Coil	106731					Pri. Tapped @ .5Ω, 3.7Ω
L8	40.5KC Osc. Coil	106731					Pri. Tapped @ .5Ω, 3.7Ω
L9	Transmitter Output Trans.	106732					Tapped @ 2Ω

BATTERIES

ITEM No.	VOLTAGE	RCA Victor PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M8	13.5V *	VS-304		XX9		239		M-1900	* 9 volt tap used

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M9	Switch	106730	Picture & On-Off, Sound, Channel (3 Section push type momentary contact)


1ST HIGH FREQ AMP V1 6CB6
2ND HIGH FREQ AMP V2 6AU6
3RD HIGH FREQ AMP V3 A 6CG7
DET V4 A 6AL5
1ST LOW FREQ AMP V5 A 6AN8
NOISE AMP CATHODE FOLLOWER V5 B 6AN8
1ST LOW FREQ RECT V4 B 6AL5
RELAY CONTROL V3 B 6CG7
2ND LOW FREQ RECT V6 A 6BN8
RELAY CONTROL V7 A 6CG7
NOISE RECT V6 B 6BN8
3RD LOW FREQ RECT V6 C 6BN8
RELAY CONTROL V7 B 6CG7
RECT V8 6X4
TRANSDUCER
ON-OFF RELAY M3
ON-OFF M6
SOUND RELAY M5
LATCHING RELAYS
SOUND M7
CHANNEL SELECTOR RELAY M4
VOLUME R1 1meg
OSC 1 2N407
OSC 2 2N407
AMP 2N407
HEAT SINK
13.5V 9V TAP M8
CHANNEL M9A
SOUND M9B
PICTURE & ON-OFF M9C
OFF
ON
MOMENTARY CONTACT SWITCH (M9) OPERATING SEQUENCE :
1. M9C CLOSED - OFF-ON
2. M9A & M9C CLOSED - CHANNEL SELECTION
3. M9A, M9B, M9C CLOSED - SOUND
REMOTE SWITCH M2
REMOTE OFF
REMOTE ON
300V SOURCE

RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N407	+6800Ω	+100Ω	3.2Ω
X2	2N407	+6800Ω	+100Ω	3.2Ω
X3	2N407	+ 4Ω	+10Ω	49Ω

TRANSISTOR REMOVED FOR RESISTANCE MEASUREMENTS.
+ MEASURED FROM POSITIVE TERMINAL OF C29.

RESISTANCE READINGS

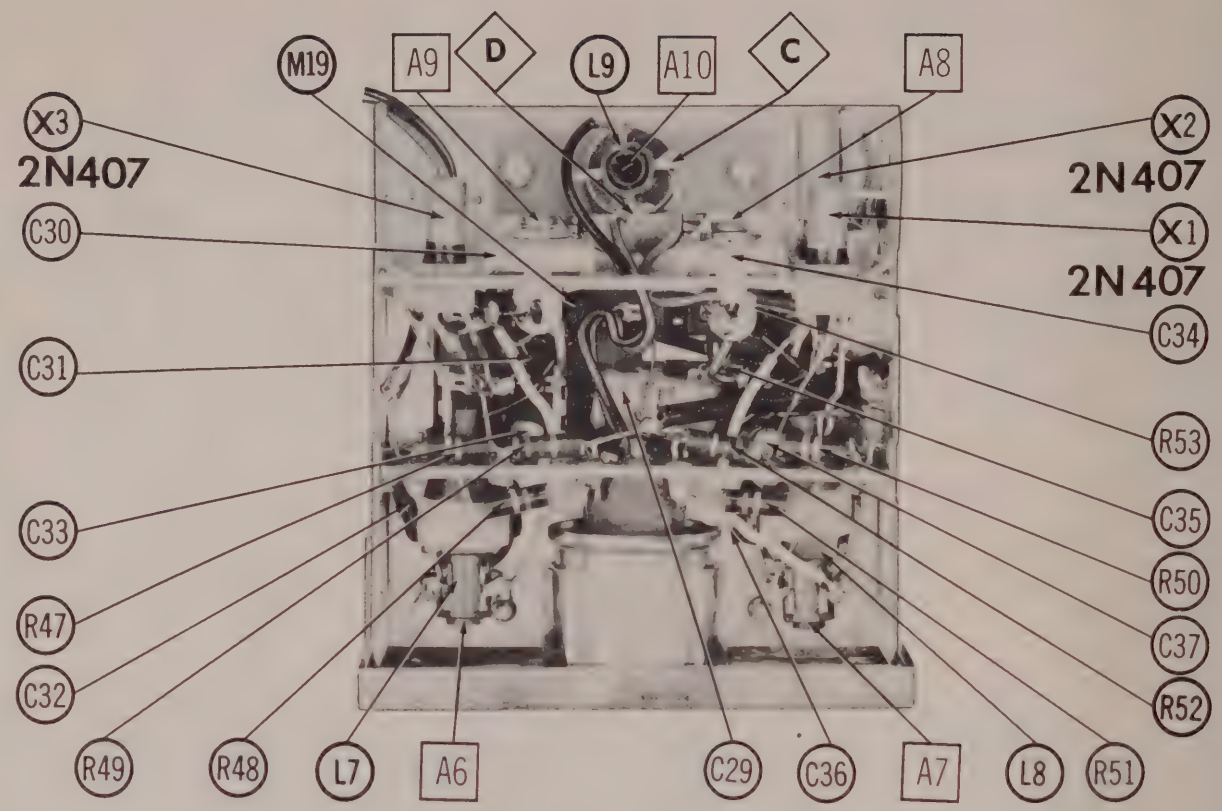
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CB6	1000Ω	180Ω	.1Ω	0Ω	†12K	†77K	180Ω		
V2	6AU6	1.6meg	5600Ω	.1Ω	0Ω	†4000Ω	†48K	5600Ω		
V3	6CG7	†5800Ω	1.5meg	9000Ω	.1Ω	0Ω	†175K	1200Ω	1000Ω	0Ω
V4	6AL5	47K	610Ω	.1Ω	0Ω	1.4meg	NC	470K		
V5	6AN8	†8900Ω	1meg	455Ω	.1Ω	0Ω	†270K	†1meg	1meg	0Ω
V6	6BN8	180K	0Ω	1.4meg	.1Ω	0Ω	610Ω	610Ω	610Ω	1.4meg
V7	6CG7	†5800Ω	1.5meg	9000Ω	0Ω	1Ω	†5800Ω	1.5meg	9000Ω	NC
V8	6X8	100Ω	NC	0Ω	1Ω	NC	100Ω	¶		

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM 320V SOURCE.
NC NO CONNECTION.

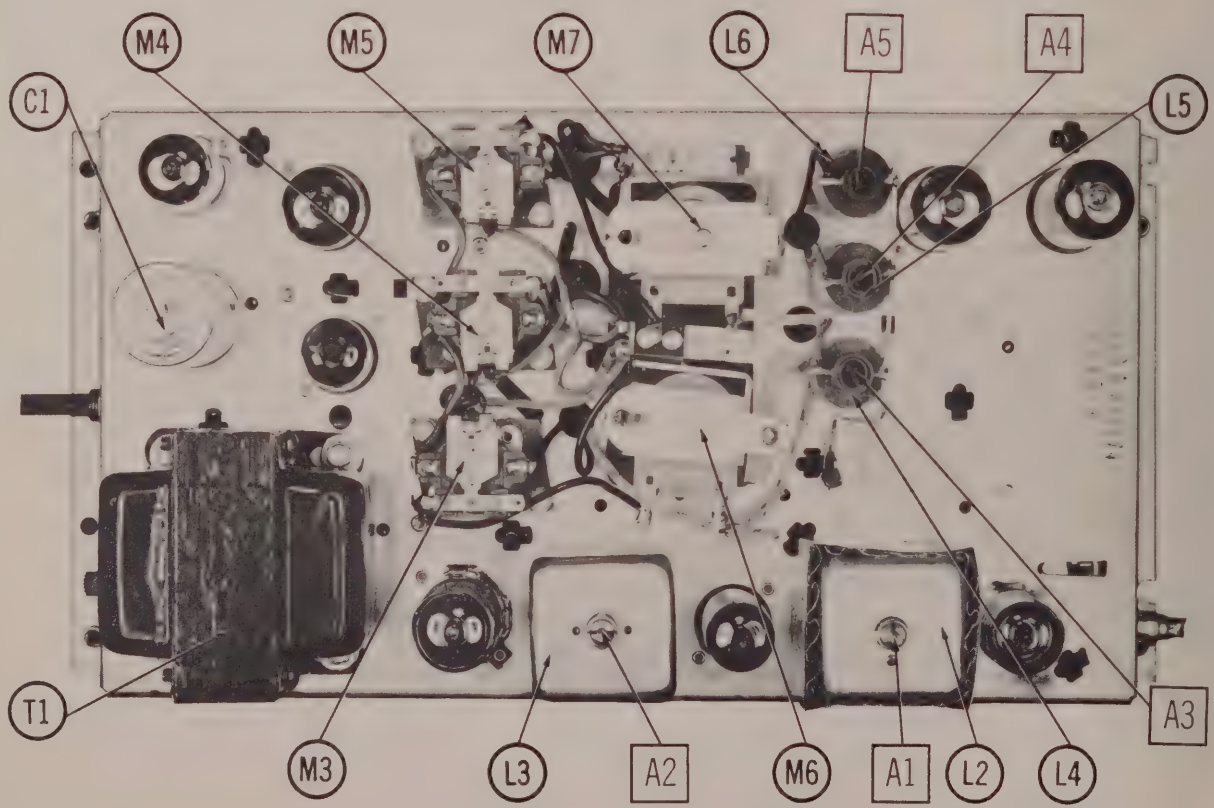
A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

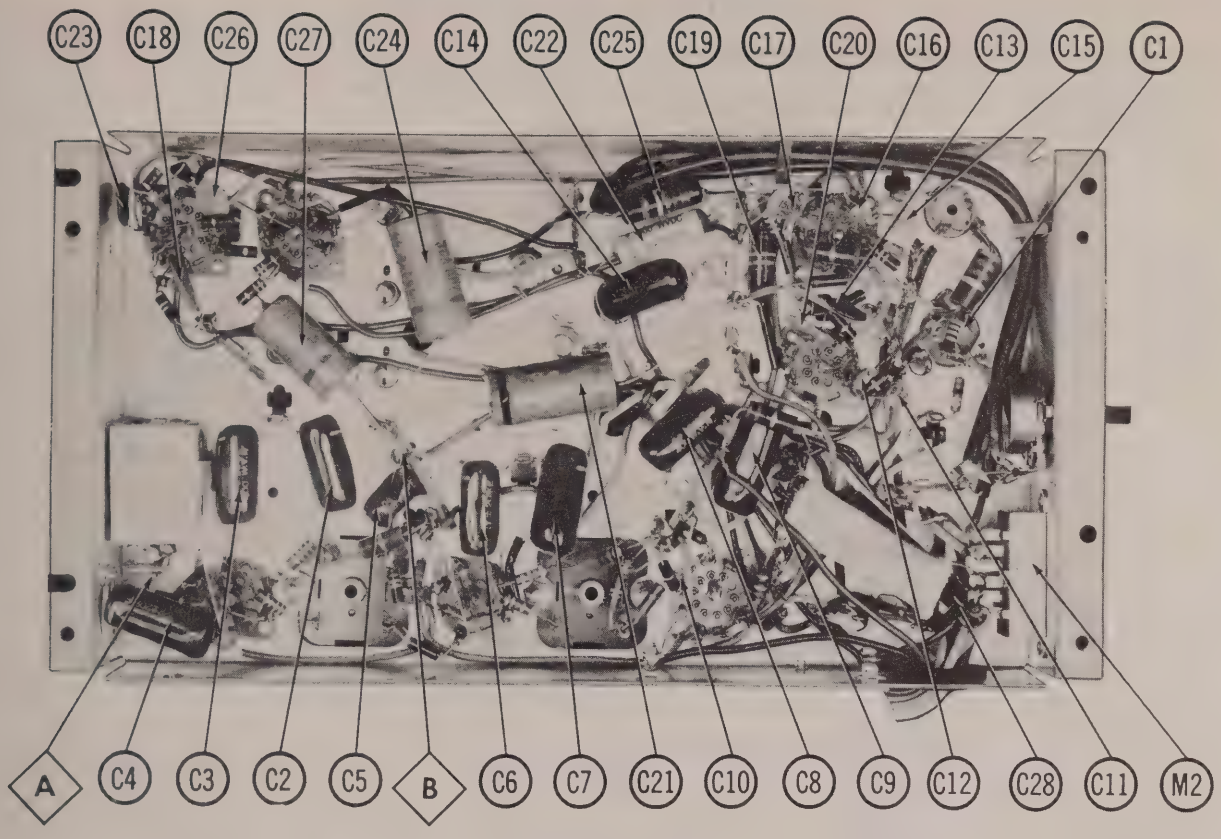
REMOTE RECEIVER KRK83B & TRANSMITTER KRK84A



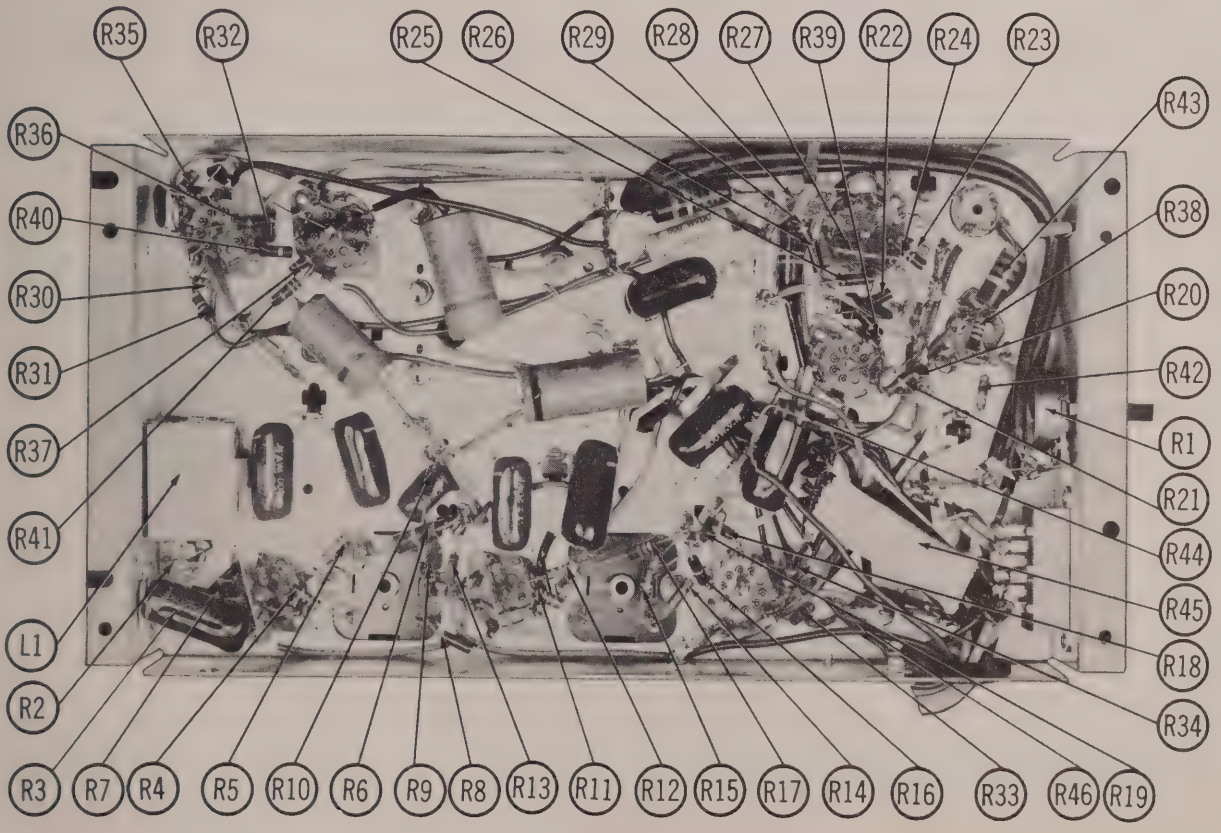
REMOTE CONTROL KRK84A



REMOTE RECEIVER KRK83B-TOP VIEW



REMOTE RECEIVER KRK83B-CAPACITOR & ALIGN. IDENT.



REMOTE RECEIVER KRK83B-RESISTOR IDENT.

REMOTE CONTROL
ALIGNMENT INSTRUCTIONS

REMOTE CONTROL RECEIVER ALIGNMENT FOR KRK83B

A transmitter which has been checked for frequency accuracy may be substituted for the Signal Generator.
Preset A1 and A2 so that the cores are at approximately the center of the coils.
Suggested alignment tools:
A1, A2 ..... General Cement #8721, 8722
Walsco #2519
A3, A4, A5 ..... General Cement #8607, 9291
Walsco #2520, 2522, 2523, 2524, 2537
A6, A7, A10 ..... General Cement #9440
A8, A9 ..... General Cement #5000, 5003, 5014, 5015, 5016, 8276, 8290
Walsco #2512, 2515, 2522, 2523, 2525, 2537

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	1500mmf Ceramic Capacitor	High side to point (A) Low side to chassis.	40.5KC (Unmod)		DC probe to point (B). Common to chassis.	A1, A2	Adjust for maximum deflection. Use only enough generator output to provide a usable indication on VTVM.
14.	"	"	1.25KC		DC probe to pin 5 (cathode) of 6AL5 (1st. LF Rect.). Common to chassis.	A3	"
15.	"	"	2.25KC		DC probe to pin 3 (cathode) of 6BN8 (2nd. LF Rect.). Common to chassis.	A4	"
16.	"	"	3.5KC		DC probe to pin 9 (cathode) of 6BN8 (3rd. LF Rect.). Common to chassis.	A5	"

REMOTE CONTROL TRANSMITTER ALIGNMENT FOR KRK84A

A separate transmitter which has been checked for frequency accuracy may be substituted for the Signal Generator.
Remove the 40.5KC Oscillator transistor.
The bottom shield and front bezel must be in place during alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17.	1500mmf Ceramic Capacitor	High side to Vert. Amp. of scope. Low side to scope.	41.75KC (Unmod) (Depress "On-Off" button)		Vert. Amp. thru 10mmf to point (C). Low side to chassis.	A6	Adjust for zero beat on scope.
18.	"	"	40.5KC (Depress "Sound" button)		"	A7	Adjust for zero beat on scope. Replace the 40.5KC transistor in transmitter. Remove 41.75KC Oscillator transistor.
19.	"	"	40.5KC (Depress "On-Off" button)		"	A8	Adjust for zero beat on scope.
20.	"	"	38.25KC (Depress "Sound" button"		"	A9	Adjust for zero beat on scope. Replace 41.75KC transistor.
21.		Disconnect signal generator.	Depress "Channel" button		Vert. Amp. thru 10mmf to point (D). Low side to chassis.	A10	Adjust for maximum amplitude consistent with maximum modulation percentage. (See Fig. 1)

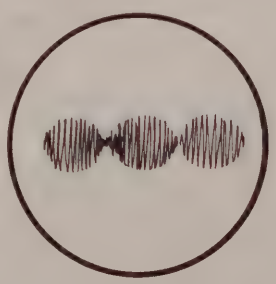
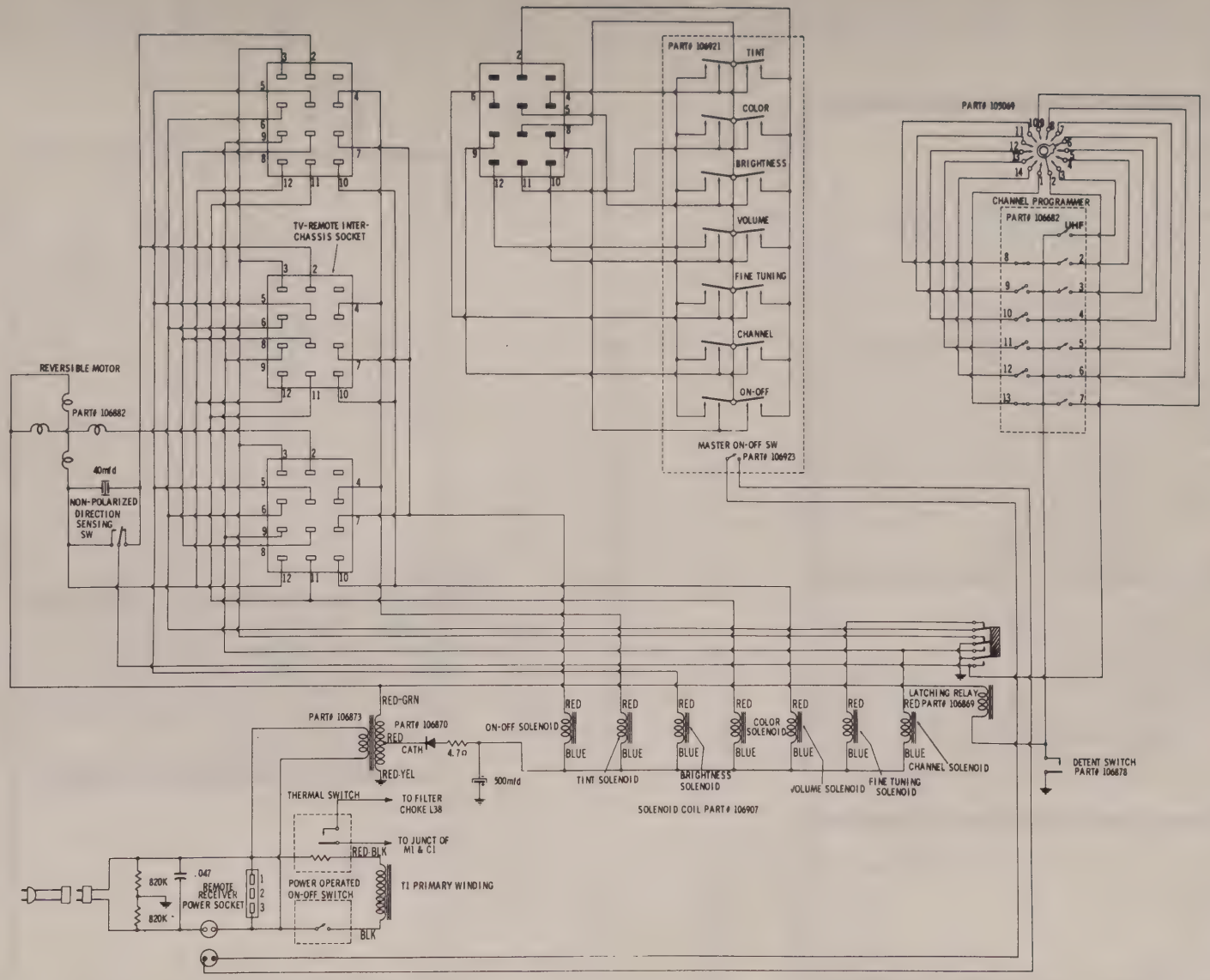


FIG. 1

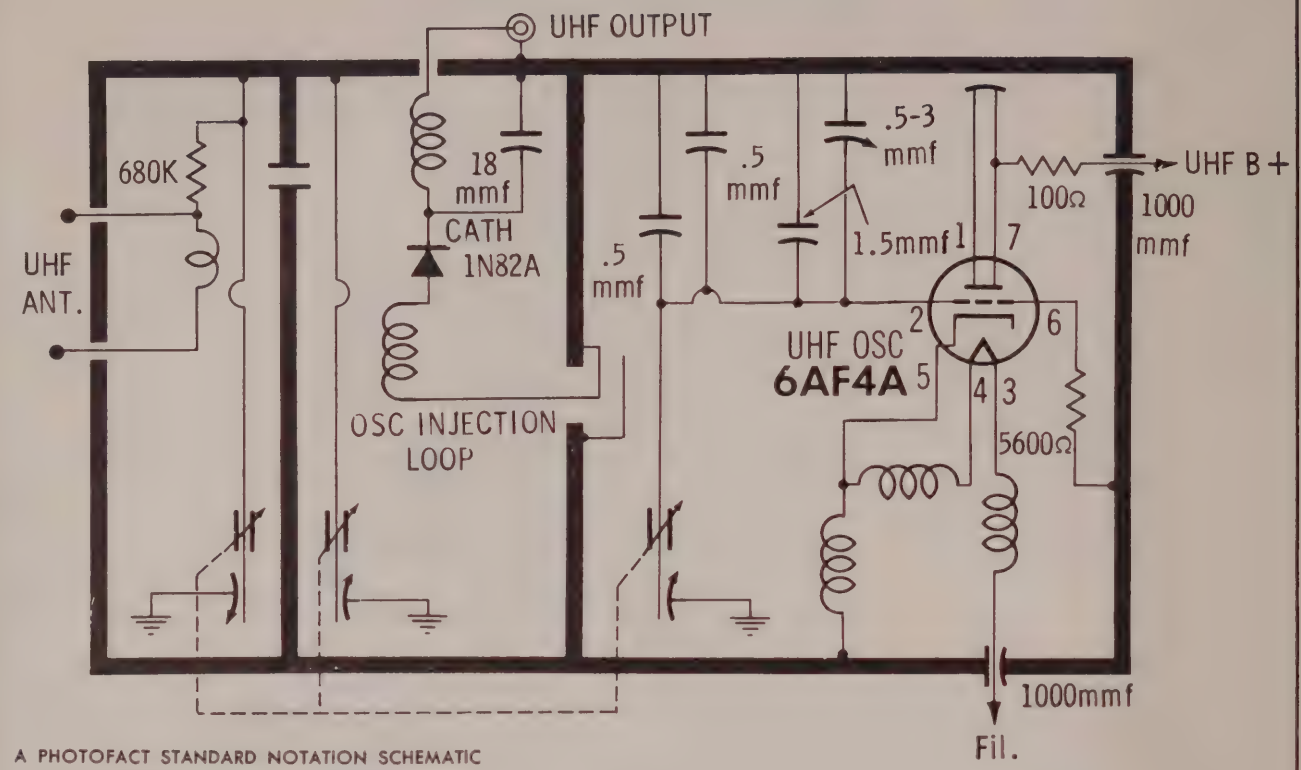


A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

AC INPUT & REMOTE CIRCUITS CH. CTC7AM, AN

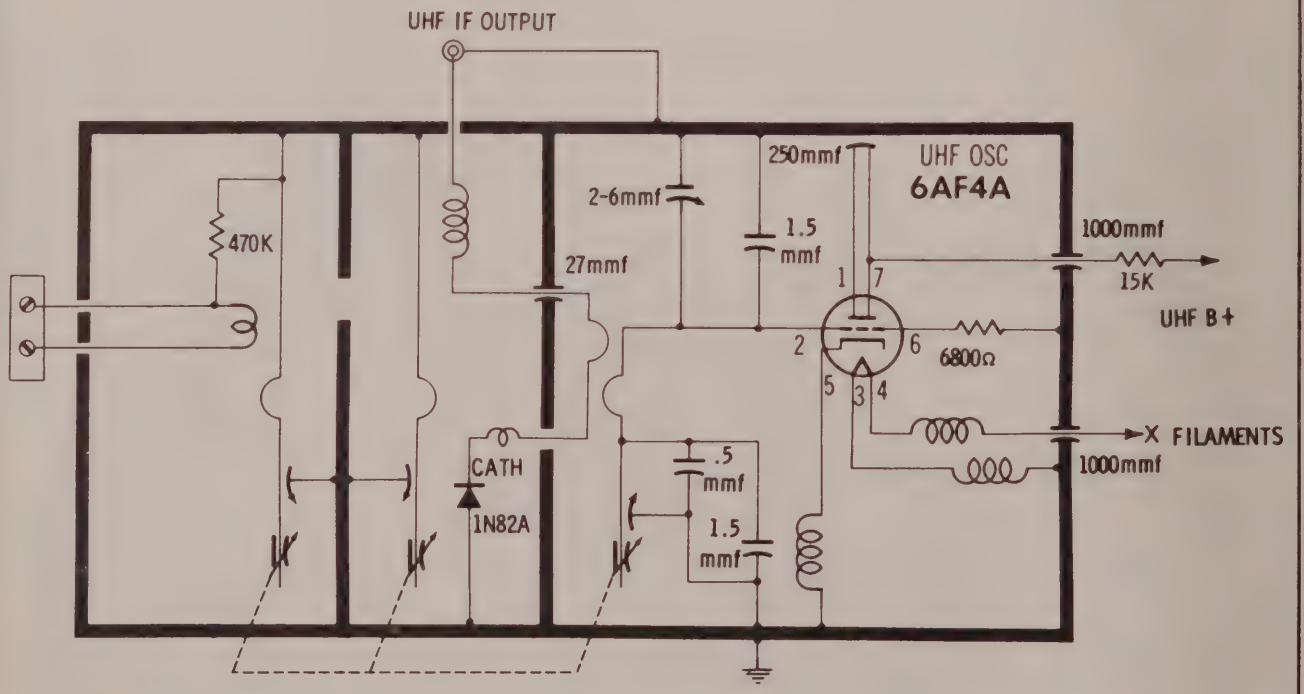
RCA VICTOR CHASSIS CTC7AA, AB, AC, AD, AE, AF, AH, AJ, AK, AL, AM, AN, CRK1A, CTP6A, KRK83B, KRK84A



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

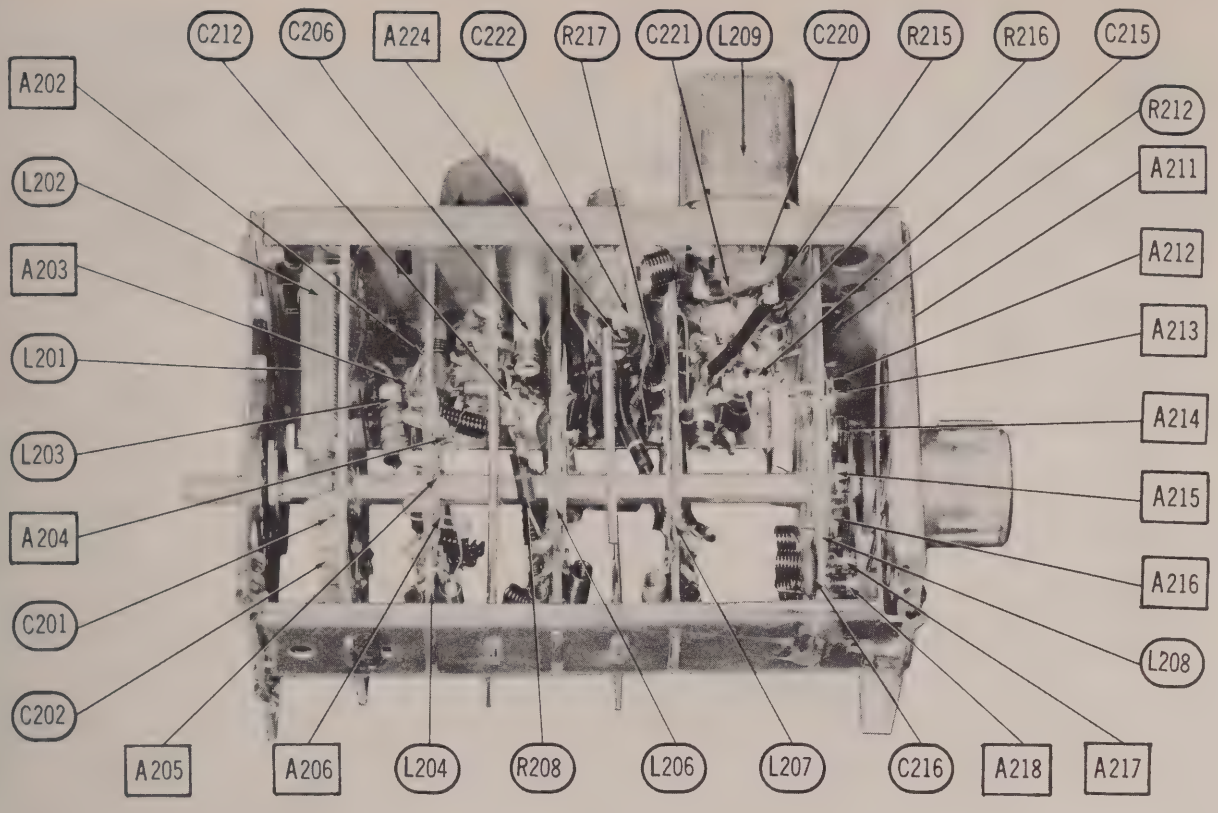
UHF TUNER KRK66L, M, P & R



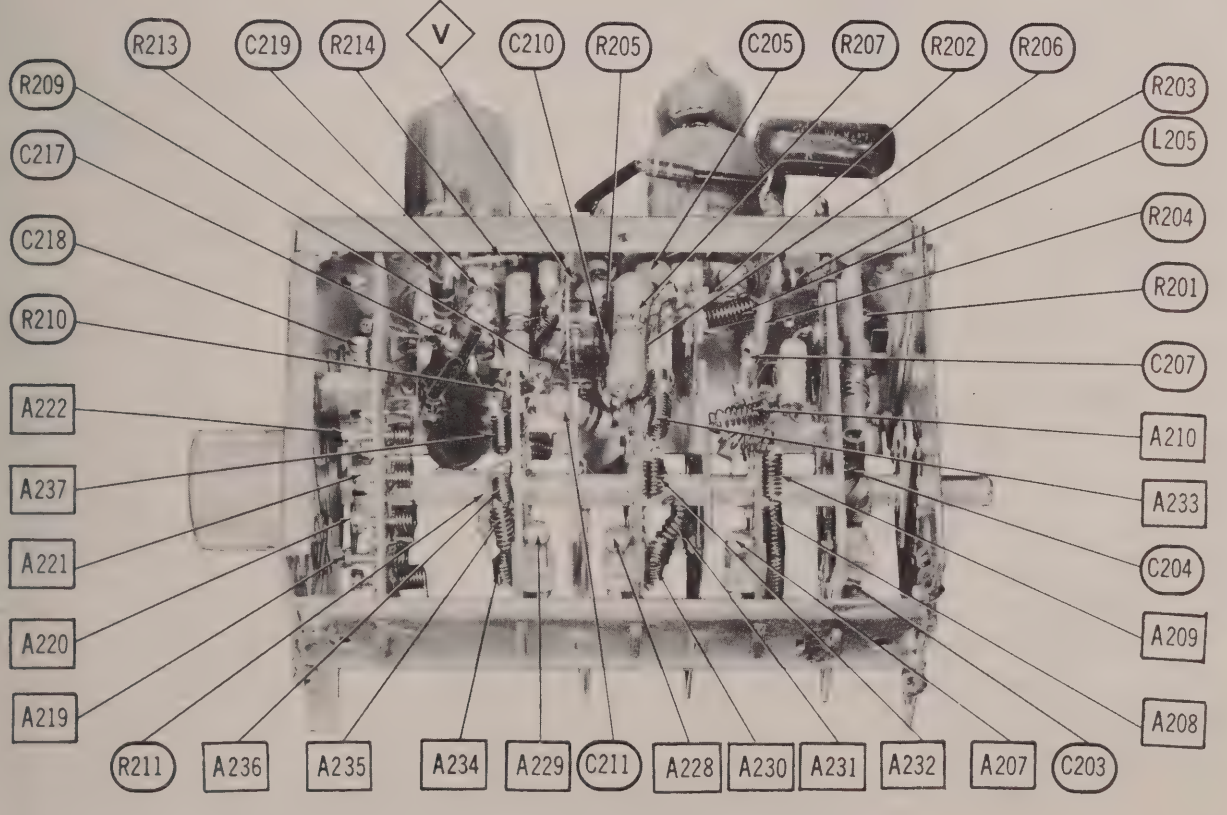
A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

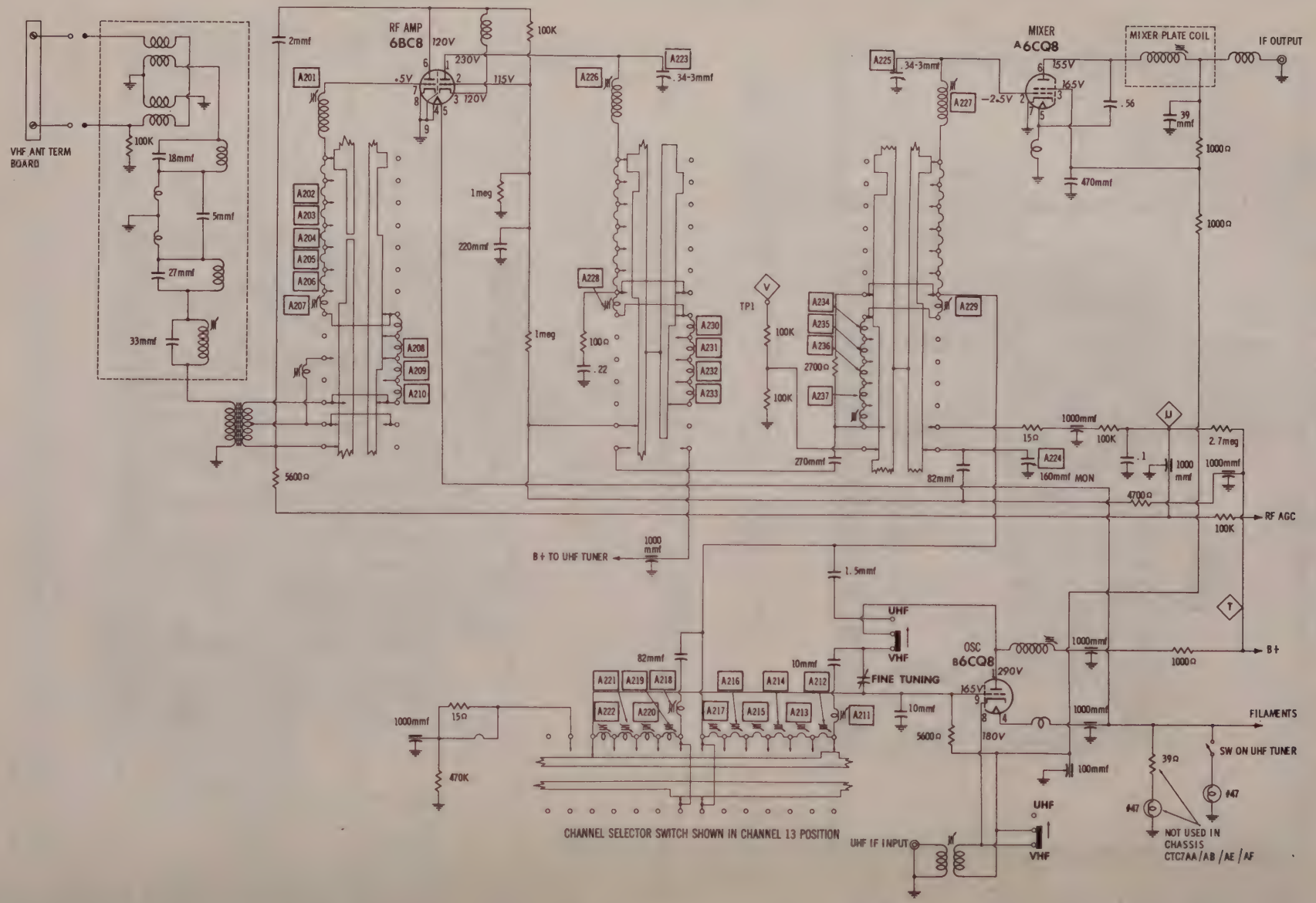
ALTERNATE CIRCUIT UHF TUNER KRK66L, M, P & R



TUNER KRK48B - LEFT SIDE



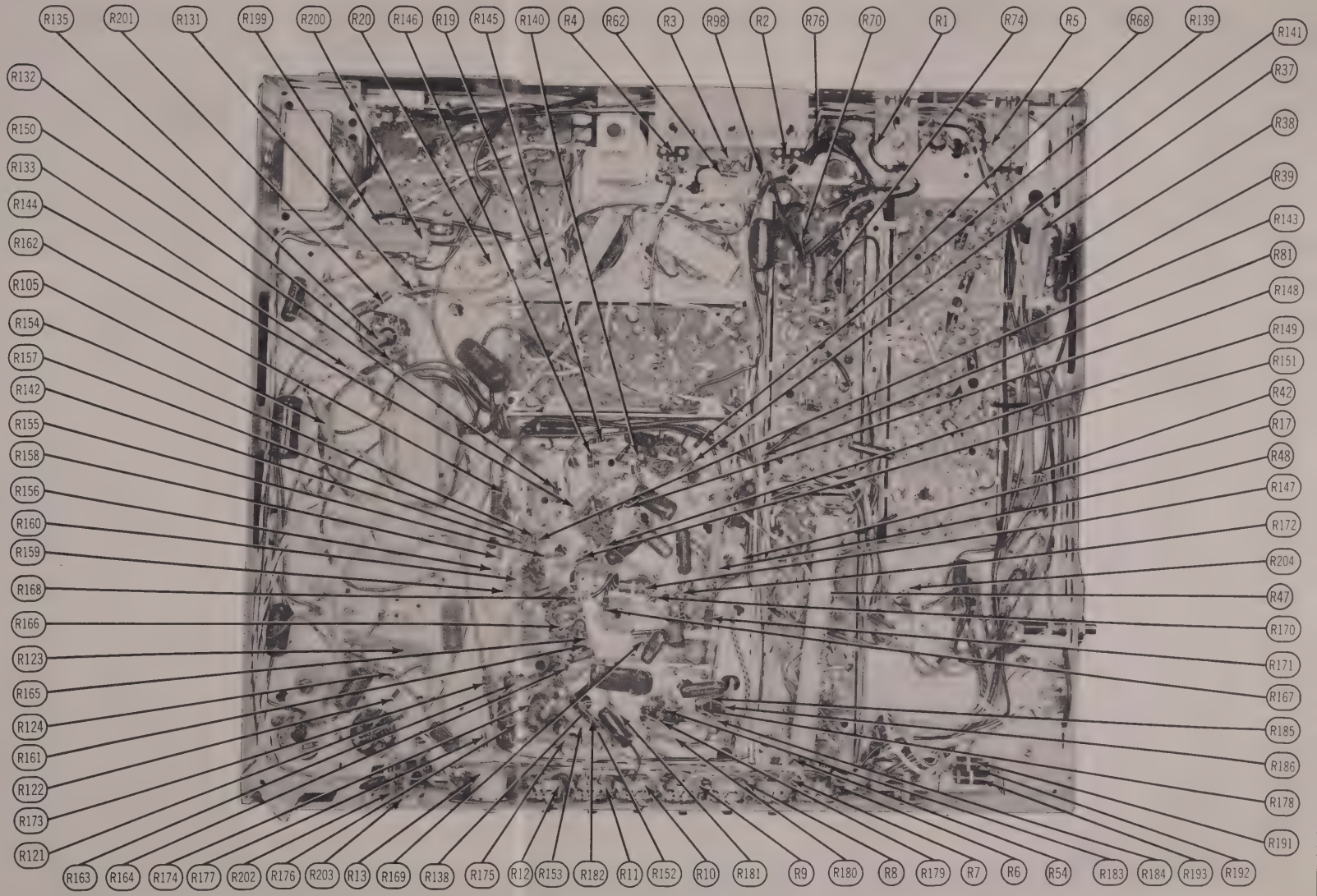
TUNER KRK48B - RIGHT SIDE



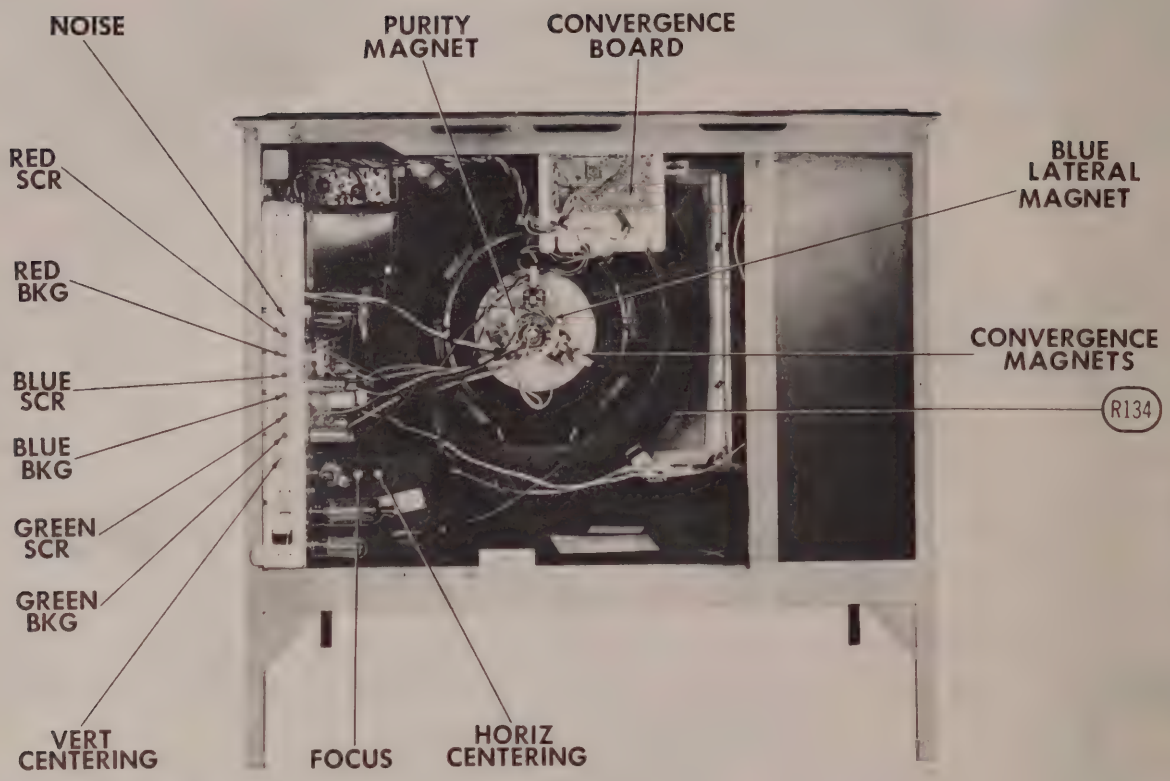
A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

VHF TUNER WITH UHF PROVISIONS KRK49B, C, KRK76A, B



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



CABINET—REAR VIEW

DISASSEMBLY INSTRUCTIONS

SAFETY GLASS REMOVAL

Remove top and bottom trim strips by prying at their center. Slide the retaining bars at top and bottom to release and remove them. Remove the safety glass.

CHASSIS REMOVAL

I. Remove 10 push-on type knobs from the side.

II. Remove 5 wood screws, 2 metal screws and 3 metal clips holding the rear cover. Remove the rear cover.

3. Remove the picture tube socket, convergence yoke plug, yoke leads, purity magnet ground lead, HV lead and speaker leads. (Remove Remote Control plugs if so equipped.)

4. Remove 2 wood screws holding top chassis support bracket.

5. Remove 2 chassis bolts from the bottom, 1 from the top.

6. Remove the chassis.

PHOTOFACT* Folder

EIA

PRODUCTION CHANGE BULLETIN 215

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 378

Airline Models GTM-4031A and GTM-4131A were covered in Photofact Folder 2 - Set 378.

Models GTM-4031A and GTM-4131B are added along with late production changes, with the publication of this bulletin.

Models GTM-4031A. GTM-4131A

ALTERNATE VERT. MULT. - VERT. OUTPUT TUBES

V11 (Vert. Mult. -Vert. Output) may be a 12W6GT or a 12EN6GT.

ALTERNATE PICTURE TUBE

V16 (Picture Tube) may be a 17BUP4 or a 17BJP4.

TO IMPROVE VERTICAL SWEEP

C57 is decreased from .0047mfd to .0039mfd.

R62 is increased from 2.2meg to 3.3meg.

COMPONENT CHANGES

C72 is increased from 100mmf @ 5000V to 150mmf @ 4000V.

C80 is decreased from .15mfd @ 400V to .033mfd @ 600V.

T3 (Horizontal Output Transformer) is changed to Part #493V004H06. Replacement data for this part is the same as on page 12 of Photofact Folder 2 - Set 378. An additional replacement not mentioned in the above Photofact Folder is RAM #X163.

AIRLINE MODELS GTM-4031A, B, GTM-4131A, B

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 8 IN SET 401

Ford Models 74MF (B7A-18805-A1) and 84MF (B8A-18805-B) were covered in Photofact Folder 8 - Set 401.

The following data was eliminated from the original Photofact.

TRANSISTOR BIAS ADJUSTMENT (R3)

1. Set R3 for maximum resistance (fully counterclockwise).
2. Disconnect speaker.
3. Connect a low internal resistance 0-1A DC ammeter in series with the ground lead (brown) of the output transformer (T2).
4. Connect a power source of 12.6 volts DC to the receiver and allow a 15 minute warm-up period.
5. Adjust R3 for a meter reading of 350MA. (If a power source of 14.4 volts DC is used, adjust R3 for a meter reading of 430MA).

CORRECTION NOTICE

On page 2. upper left corner. R4 should be R14.

On page 2, bottom right corner, X1 should be 2N176.

FORD MODELS 74MF, 84MF

PRODUCTION CHANGE BULLETIN 215

PRODUCTION CHANGE BULLETIN 215

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 11 IN SET 308

RAULAND MODEL HF155A

Rauland Model HF155 was covered in Photofact Folder 11 - Set 308.

Model HF155A is electrically identical to the model covered except for the following changes.

COMPONENT CHANGES

R19 is increased from 6800Ω 2W to 10K 1W.

L1 (FM Ant. Coil) is changed to Part #LW-0106.

L4 (FM RF Coil) is changed to Part #LW-0105.

L7 (BC Ant. Coil) is changed to Part #LW-0109.

L10 (1st FM IF) is changed to Part #LR-0032.

L11 (1st AM IF) is changed to Part #LR-0041.

L13 (2nd FM IF) is changed to Part #LR-0043.

L14 (2nd AM IF) is changed to Part #LR-0041.

L15 (3rd FM IF) is changed to Part #LR-0043.

L16 (FM Limiter) is changed to Part #LR-0043.

L18 (Discriminator) is changed to Part #LQ-0179.

CORRECTION NOTICE

C7 is connected in error to pin 6 of V3. Disconnect the capacitor lead from pin 6 of V3, and reconnect to the junction of C6 and L4 (FM RF Coil).

METER AMP CIRCUIT ADDED

V11 (Cathode Follower) is changed from a 6AU6 to a 12AU7 (Cathode Follower-Meter Amp.) a partial schematic showing the new circuit is given in this bulletin.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 7 IN SET 371

RCA VICTOR MODELS 8BT9E, J (Ch. RC-1164)

RCA Victor Models 9BT9E, H, J (Ch. RC-1164A) were covered in Photofact Folder 7 — Set 371.

Models 8BT9E, J (Ch. RC-1164) are electrically identical to the models covered except for the following changes.

COMPONENT CHANGES

R7 is increased from 220Ω to 1000Ω.

R12 is increased from 3300Ω to 5600Ω.

Ch. RC-1164, A

CORRECTION NOTICE

The correct part number for SP1 (speaker) is 103023 and is used in all models and chassis mentioned above.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 11 IN SET 275

PILOT MODEL AA-410A

Pilot Model AA-410 was covered in Photofact Folder 11 - Set 275.

Model AA-410A is electrically identical to the model covered, except for the following changes.

COMPONENT CHANGES

R2 is decreased from 4700Ω to 2200Ω.

An 82mmf @ 500V ceramic disc capacitor is added from pin 2 of V2 to ground.

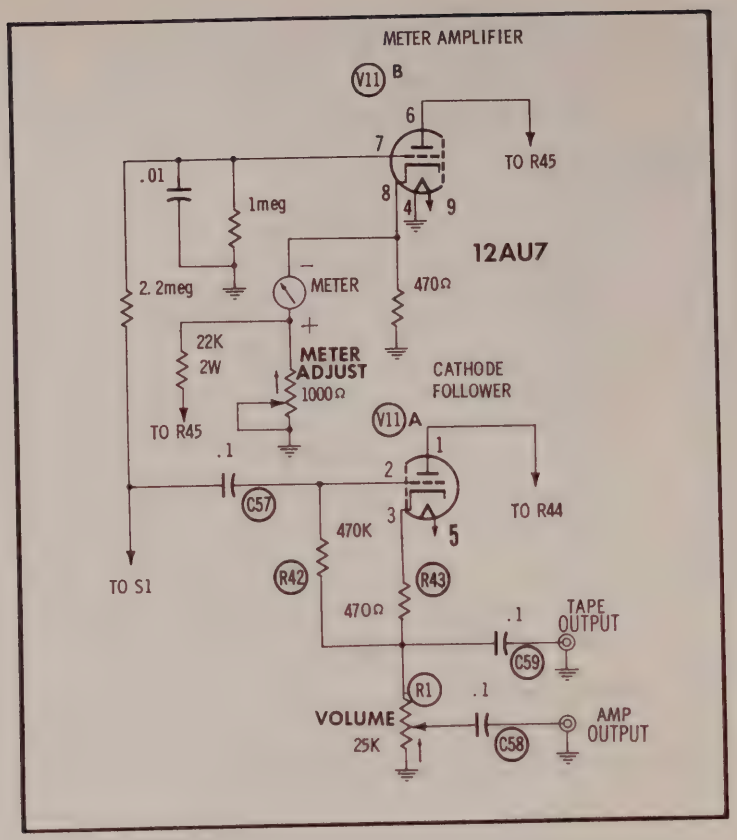
R10 is decreased from 250Ω to 240Ω.

R14 is decreased in wattage from 2 watts to 1 watt.

R13 is omitted.

R16 is decreased in wattage from 5 watts to 4 watts.

T2, audio output transformer, is changed to Part #56-49.

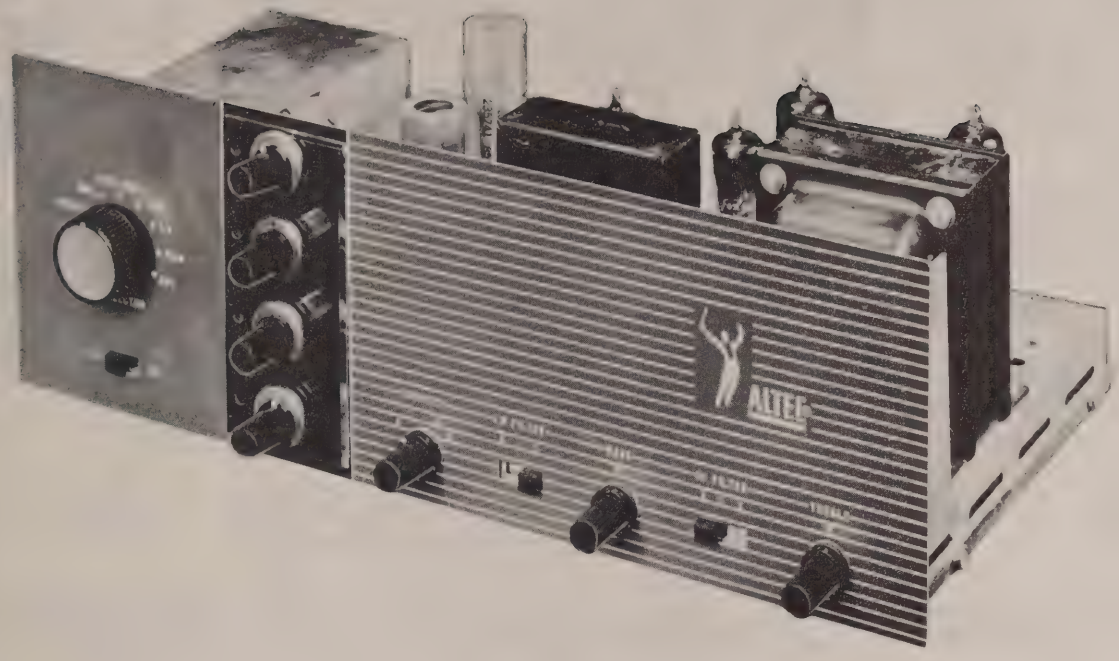

METER AMPLIFIER
V11 B
6
7
8
4
9
TO R45
.01
1meg
12AU7
2.2meg
METER
470Ω
22K
2W
METER
ADJUST
1000Ω
CATHODE
FOLLOWER
V11 A
TO R45
.1
1
2
3
5
C57
TO R44
470K
TO S1
R42
R43
470Ω
.1
TAPE
OUTPUT
C59
R1
.1
VOLUME
25K
AMP
OUTPUT
C58

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

ALTEC LANSING MODEL 344A

ALTEC LANSING
MODEL 344A



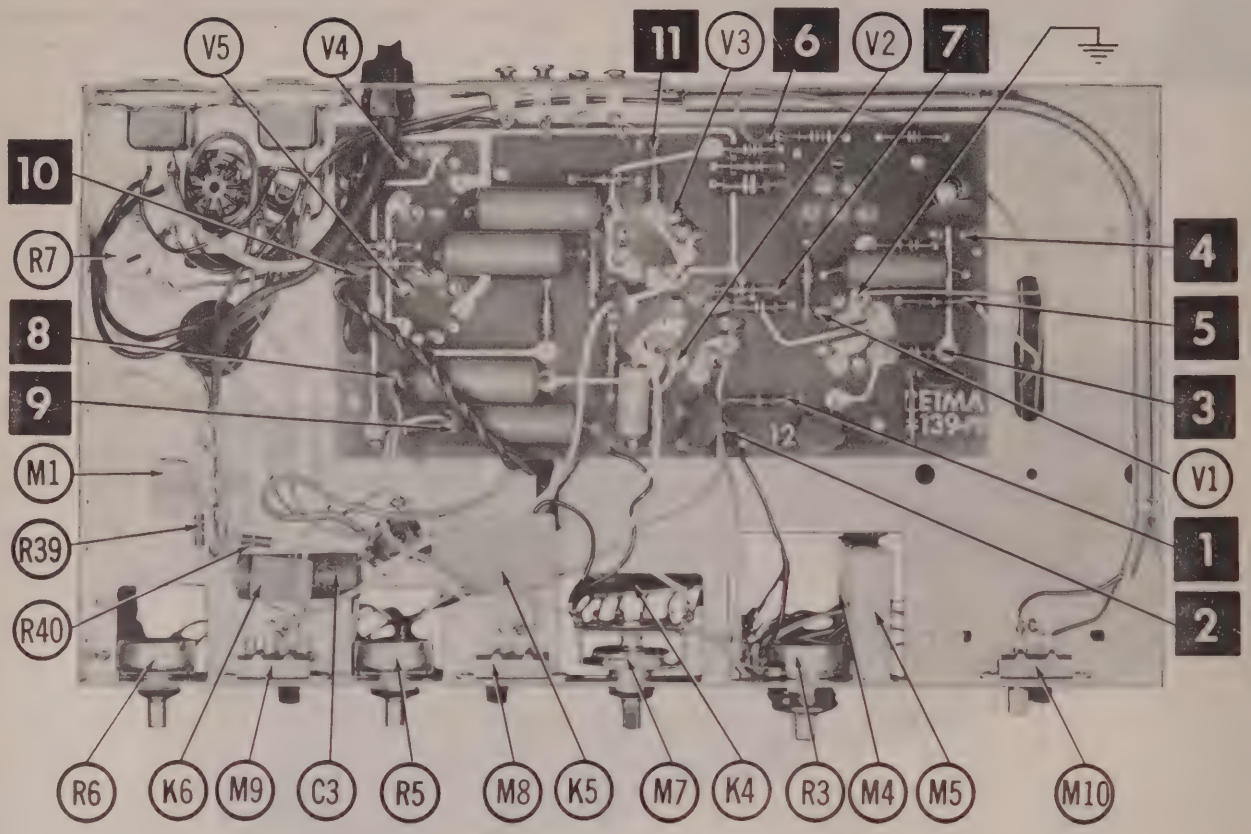
ALTEC LANSING
MODEL 344A

TRADE NAME	Altec Lansing Model 344A
MANUFACTURER	Altec Lansing Corp., 9356 Santa Monica Blvd., Beverly Hills, California
TYPE SET	AC Operated 6 Channel Audio Amplifier
TUBES	Six
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 62 Watts, .625 Amp@117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

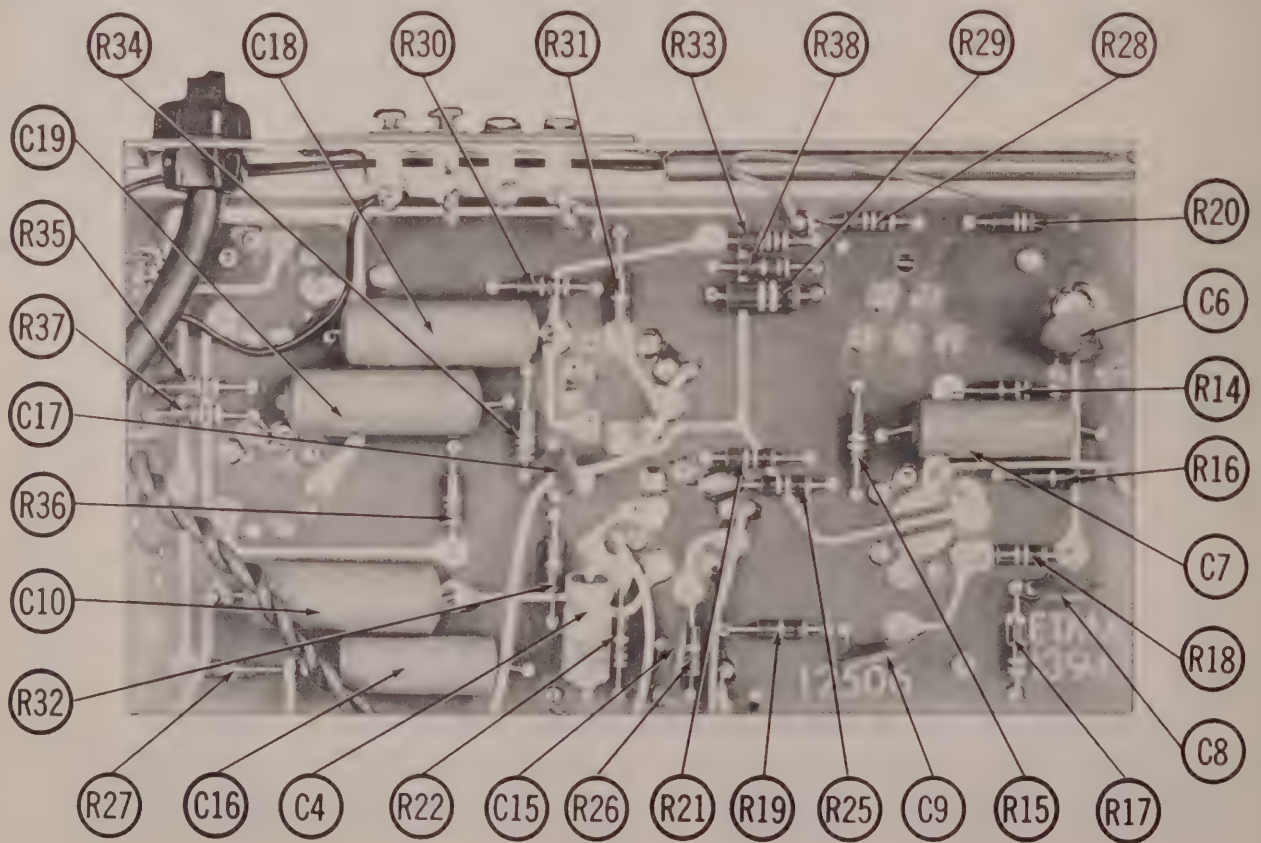
H839



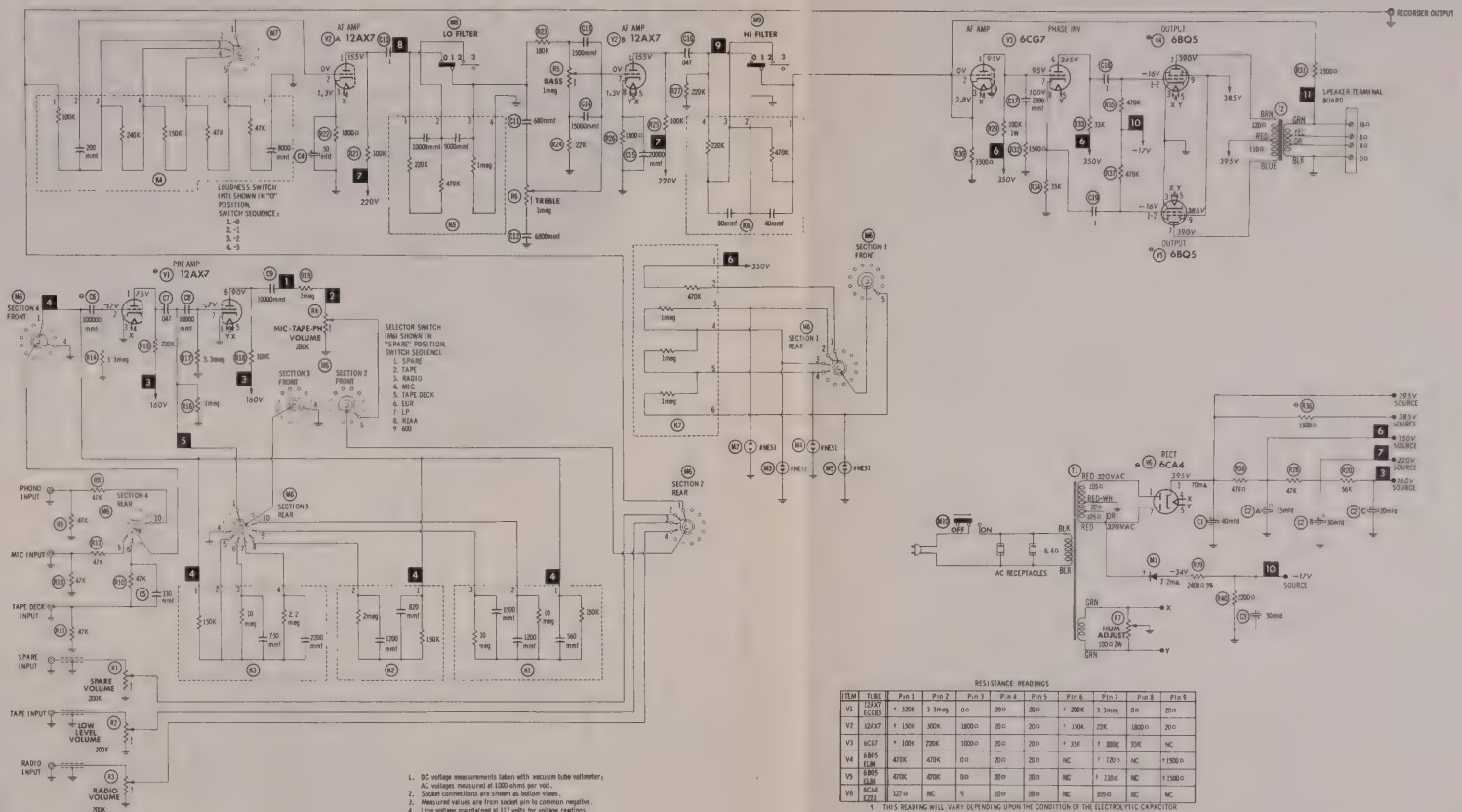
A Howard W. Sams CIRCUITRACE Photo

CHASSIS-BOTTOM VIEW

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PRINTED BOARD



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7 ECC83	† 320K	3 3meg	0Ω	20Ω	20Ω	† 200K	3 3meg	0Ω	20Ω
V2	12AX7	† 150K	300K	1800Ω	25Ω	20Ω	† 150K	22K	1800Ω	20Ω
V3	6CG7	† 100K	720K	1000Ω	20Ω	20Ω	† 33K	† 300K	33K	NC
V4	6BQ5 EL84	470K	470K	0Ω	20Ω	20Ω	NC	† 120Ω	NC	† 1500Ω
V5	6BQ5 EL84	470K	470K	0Ω	20Ω	20Ω	NC	† 120Ω	NC	† 1500Ω
V6	6CA4 EZ81	127Ω	NC	¶	20Ω	20Ω	NC	305Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM PIN 3 OF V6.
NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±10% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

©Howard W. Sams & Co., Inc. 1959

ALTEC LANSING MODEL 344A

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	Preamplifier	12AX7/ECC83
V2	AF Amplifier	12AX7
V3	AF Amp.-Phase Inv.	6CG7
V4	Output	6BQ5/EL84
V5	Output	6BQ5/EL84
V6	Rectifier	6CA4/EZ81

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Altec Lansing PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	40	450		AFH1-52	A0480	FP146	TMS-57	S-270	TVL-1725
C2A	■15	400							R2743 *
B	▲30	300							
C	20	250							
C3	50	25		PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206
C4	50	3		SRE3V50	NL50-3	TT6X50	TD-50-6	MQ-350	TVA-1100

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Altec Lansing PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	330			BPD-00033	DD-331	L10T33	UC-5333	5GA-T33	①
C6	100000				DF-104			TG-P10	
C7	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C8	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C9	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C10	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C11	680			BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C12	6800			BPD-0068	DD-682	BYA10D68	UC-5268	5GA-D68	
C13	1500			BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	
C14	15000			BPD-015	DF-153	BYA10S15		5HK-S15	
C15	20000			BPD-02	DD-203	BYB6S2		5HK-S2	
C16	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C17	2200			BPD-0022	DD-222	BYA10D22	UC-5222	5GA-D22	
C18	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C19	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	

① Some versions use 10000mmf in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Altec Lansing PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	200K	½	12507	B-51				Spare, Volume
R2	200K	½	12507	B-51				Low Level, Volume
R3	200K	½	12507	B-51				Radio, Volume
R4	200K	½	12507	B-51				Mic-Tape-Phono, Volume
R5A	1meg	½	12508	B-70 †	A47-1meg-Z	Q13-137	U53	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R6A	1meg	½	12508	B-70 †	A47-1meg-Z	Q13-137	U53	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R7	100Ω	2(WW)						Hum Adjust

† Use an extra mounting nut behind mounting surface.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Altec Lansing PART No.	NOTES
R8	47K			
R9	47K			
R10	47K			
R11	47K			
R12	47K			
R13	47K			
R14	3.3meg			
R15	220K			
R16	1meg			
R17	3.3meg			
R18	100K			
R19	1meg			
R20	56K			
R21	100K			
R22	1800Ω			
R23	180K			
R24	22K			

ITEM No.	RATING OHMS	RATING WATT	Altec Lansing PART No.	NOTES
R25	100K			
R26	1800Ω			
R27	220K			
R28	47K			
R29	100K	1		
R30	3300Ω			
R31	1500Ω			
R32	1500Ω			
R33	33K			
R34	33K			
R35	470K			
R36	1500Ω			Note 1
R37	470K			
R38	4700Ω			
R39	2400Ω 5%			
R40	2200Ω			

Note 1. Some versions may use 1000Ω in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Altec Lansing PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .625A	620 VCT @ .070A Tap @ 35V @ .007A	6.3V @ 3.6A	6302						

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Altec Lansing PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7000Ω CT	16Ω Taps ⓐ 8Ω, 4Ω	16441	Z1013 ①	A-2905①	AU-606 ①	A-3880①	24S55 ①	S-57Z ①	① Drill new mounting hole

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Altec Lansing PART No.	REPLACEMENT DATA
K1	Tone Compensation	560mmf, 1200mmf, 1500mmf, 150K, 10meg, 10meg	12461	
K2	Tone Compensation	820mmf, 1200mmf, 2meg, 150K	12460	
K3	Tone Compensation	750mmf, 2200mmf, 150K, 2.2meg, 10meg	12459	
K4	Tone Compensation	200mmf, 8000mmf, 100K, 240K, 150K, 47K, 47K	12462	
K5	Tone Compensation	10000mmf, 5000mmf, 220K, 470K, 1meg	12463	
K6	Tone Compensation	40mmf, 80mmf, 470K, 220K	12458	
K7	Tone Compensation	470K, 1meg, 1meg, 1meg	12586	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	Altec Lansing PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.0072A	S3W5-PL-HD7	1159	D-5410 SD-92 ①	10 K200①	① Silicon

MISCELLANEOUS

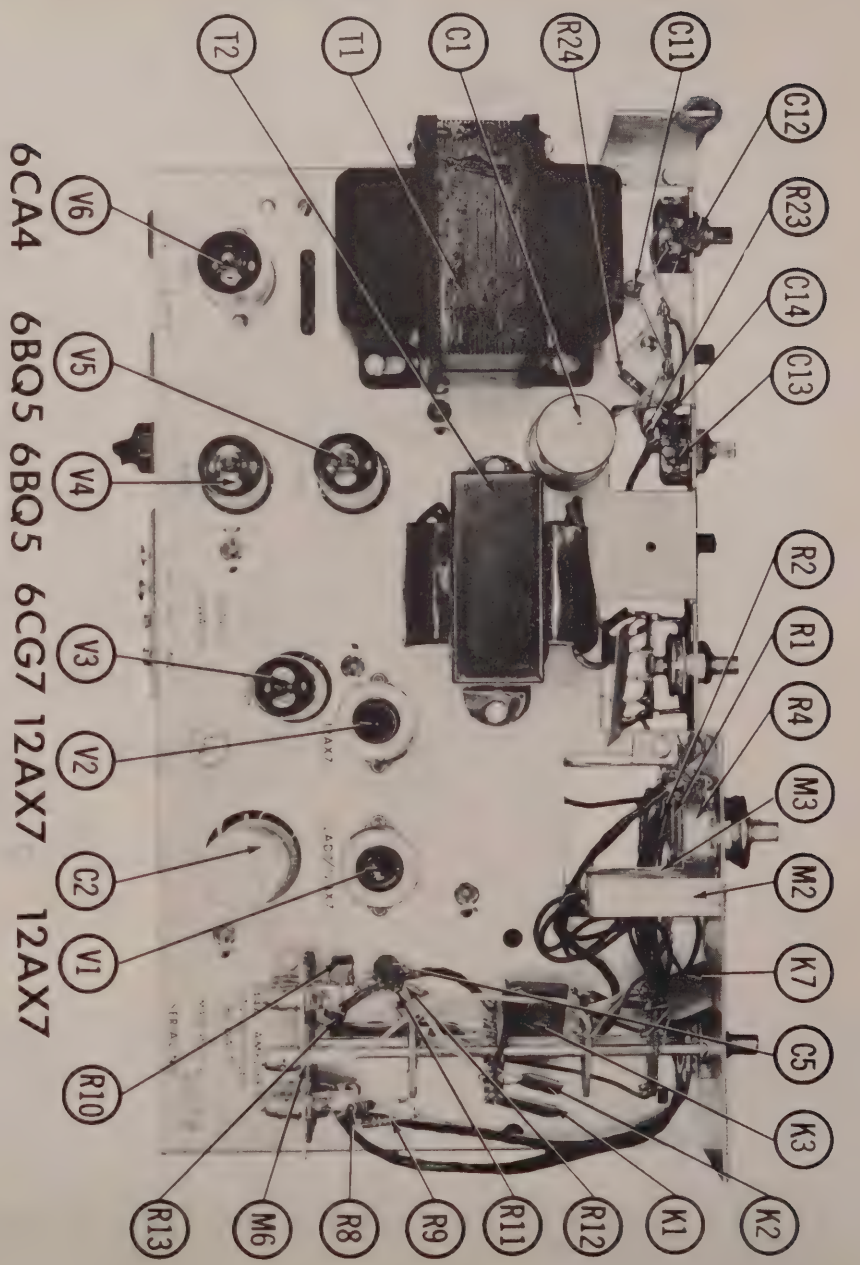
ITEM No.	PART NAME	Altec Lansing PART No.	NOTES
M2	Lamp		#NE51
M3	Lamp		#NE51
M4	Lamp		#NE51
M5	Lamp		#NE51
M6	Switch	12474	Selector, 9 Position, Rotary, Wafer Type
M7	Switch	12475	Loudness, 4 Position, Rotary, Wafer Type
M8	Switch		Low Filter, 3 Position, Slide Type, Stackpole #SS-29
M9	Switch		High Filter, 3 Position, Slide Type, Stackpole #SS-29
M10	Switch		Power, Off-On, SPST, Slide Type, Stackpole #SS-26-1
	Printed Board	12506	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—TOP VIEW



PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER

ARVIN MODEL 3588 (Ch. 1.45200)

ARVIN MODEL 3588 (Ch. 1.45200)

TRADE NAME	Arvin Model 3588 (CH. 1.45200)
MANUFACTURER	Arvin Industries, Inc., Columbus, Indiana
TYPE SET	Battery Operated Transistorized AM Receiver
POWER SUPPLY	9 Volts DC
RATING	6.4MA @ 9 Volts DC(No Signal, Min. Volume) 12MA @ 9 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	540 - 1650KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

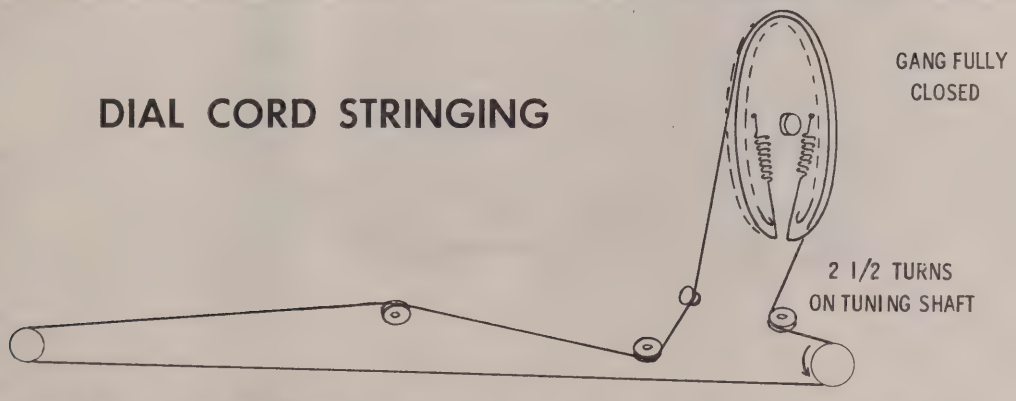
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1, A2, A3, A4.....	General Cement #5097, 8727 Walsco #2515
A5, A7.....	General Cement #5000, 5003, 5014, 5015, 5016, 8276, 8290 Walsco #2512, 2515, 2522, 2523, 2525, 2537
A6.....	General Cement #8606, 8606L, 8282, 9295 Walsco #2526, 2543, 2544, 2545

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05mfd	High side to antenna stator lug of tuning gang. Low side to B-	455 KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1670KC	"	"	A5	"
3.	"	"	600KC	600KC	"	A6	Adjust for maximum output while rocking tuning gang. Repeat Steps 2 & 3.
4.		Loop	1400KC	Tune for 1400KC signal	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

DIAL CORD STRINGING

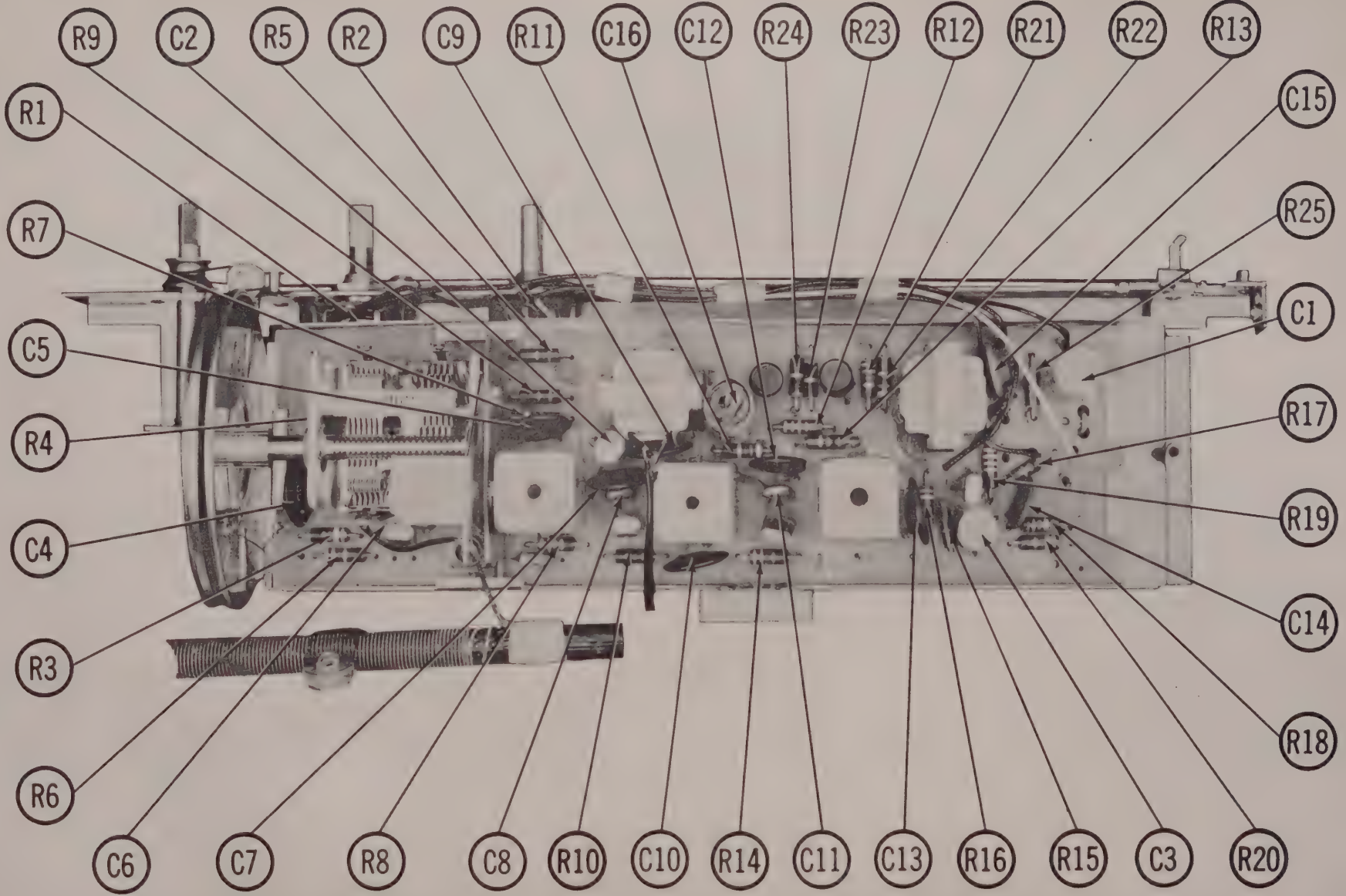


HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H858

SET 433 FOLDER 5



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N212	Converter				2N212	NPN
X2	2N94	1st IF Amplifier				2N94	NPN
X3	2N94	2nd IF Amplifier				2N94	NPN
X4	2N35	Driver				2N35	NPN
X5	2N270 *	Output		2N270	2N360	2N270	PNP
X6	2N270 *	Output		2N270	2N360	2N270	PNP

* Some versions may use 2N321 or 2N383 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	10	44397-2 ①						VL-2350
B	80	10							
C2	10	10	44396-4	PWE10010	NL10-10	TT12X10	ML10-15		TE-1114
C3	80	10	44396-5		NL100-10				TE-1119.3

① Some versions may use Part #44397-3.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	50000			BPD-05	DDA-503		BT-150	5HK-S5	
C5	20000			BPD-02	DDM-203	BYB6S2	BT-120	5HK-S2	
C6	10000			BPD-01	DDM-103	BYA10S1	BT-110	5HK-S1	
C7	20000			BPD-02	DDM-203	BYB6S2	BT-120	5HK-S2	
C8	9								NPO 10%
C9	50000			BPD-05	DDA-503		BT-150	5HK-S5	
C10	20000			BPD-02	DDM-203	BYB6S2	BT-120	5HK-S2	
C11	9								NPO 10%
C12A	20000			BPD-2X02	DDM-203	BYB6S2	BT-120		
B	20000				DDM-203	BYB6S2	BT-120	5HK-2S2	
C13	20000			BPD-02	DDM-203	BYB6S2	BT-120	5HK-S2	
C14	1.0	3							
C15	560			D1560	DD-561	L10T56	B-356	5GA-T56	
C16	.068	100		P288N-068		CUB4S68	GEM-4168	4TM-S68	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ARVIN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	2200Ω	1/2	44500-5			Q13-111		Volume
R2A	1.5meg	1/2	44500-4				PP155L	Tone
B	Switch						Not Req.	Push Pull

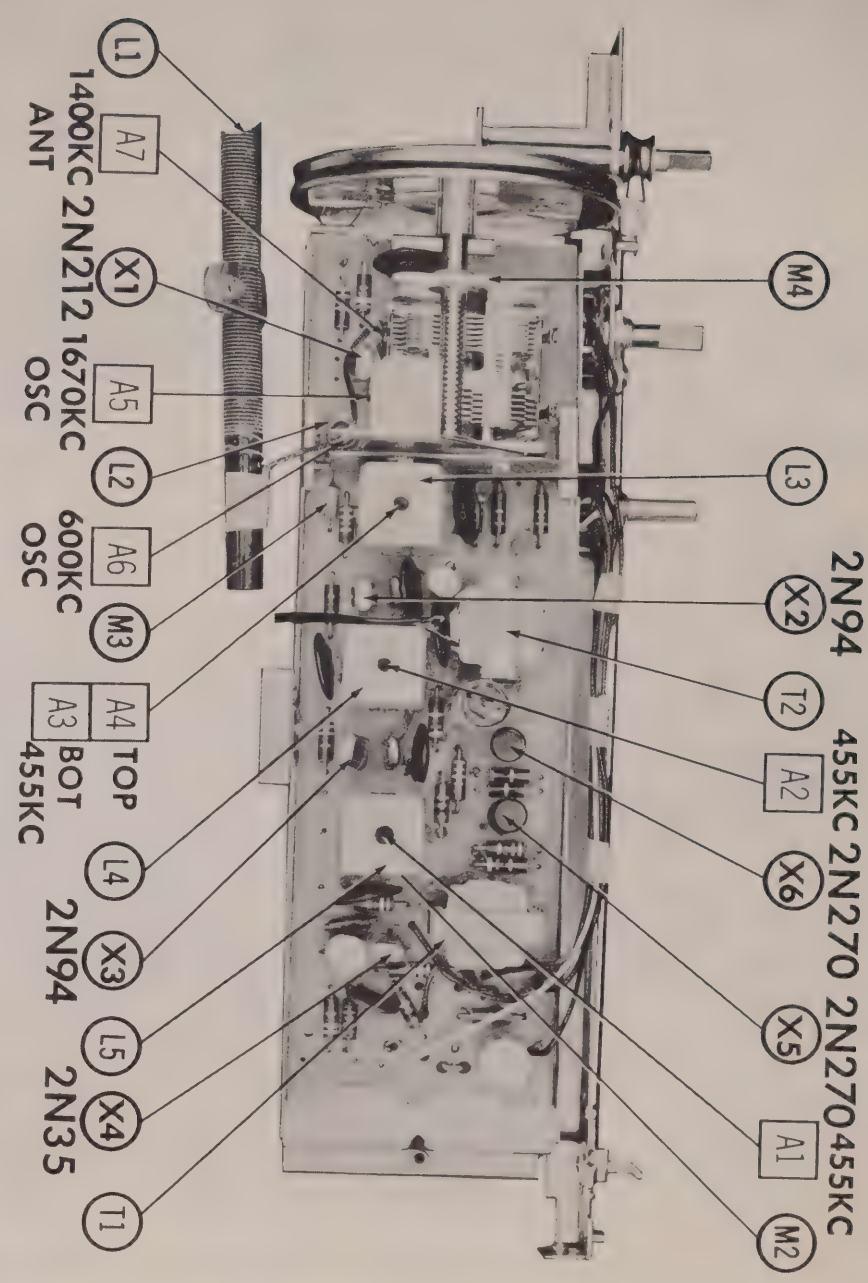
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ARVIN PART No.	NOTES
	OHMS	WATT		
R3	3900Ω 5%			
R4	27K 5%			
R5	5600Ω 5%			
R6	3300Ω			
R7	47K 5%			
R8	3300Ω			
R9	5600Ω 5%			
R10	820Ω 5%			
R11	4700Ω 5%			
R12	68K 5%			
R13	1000Ω			
R14	470Ω			

ITEM No.	RATING		ARVIN PART No.	NOTES
	OHMS	WATT		
R15	220Ω			
R16	3900Ω 5%			
R17	1000Ω			
R18	6800Ω			
R19	39K			
R20	470Ω			
R21	3300Ω			
R22	47Ω			
R23	10Ω			
R24	10Ω			
R25	220Ω			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ARVIN PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	45534-4					
L2	Osc. Coil	45783-3					
L3	1st IF	44674					
L4	2nd IF	44675					
L5	3rd IF	45900-1					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ARVIN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.2	: 1	44672						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ARVIN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	260Ω CT	3-4Ω	44671					TR22 ①	TY-57X ①	① Use original channel frame

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ARVIN PART No.	QUAM PART No.	
SP1	4"	PM	6-8Ω	45600-3 ①	4A07Z6.8 ①	① Parallel And Phase
SP2	4"	PM	6-8Ω	45600-3 ①	4A07Z6.8 ①	

BATTERIES

ITEM No.	VOLTAGE	ARVIN PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			2R ①		950 ①		M-13R ①	① 6 Used

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		ARVIN PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N295		1N60	1N295	Detector (Pigtail)
M3	1N295		1N60	1N295	Overload (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M4	Tuning Cap. Printed Board	45039-2 45810-1	2 gang, Ant. 10-170mmf

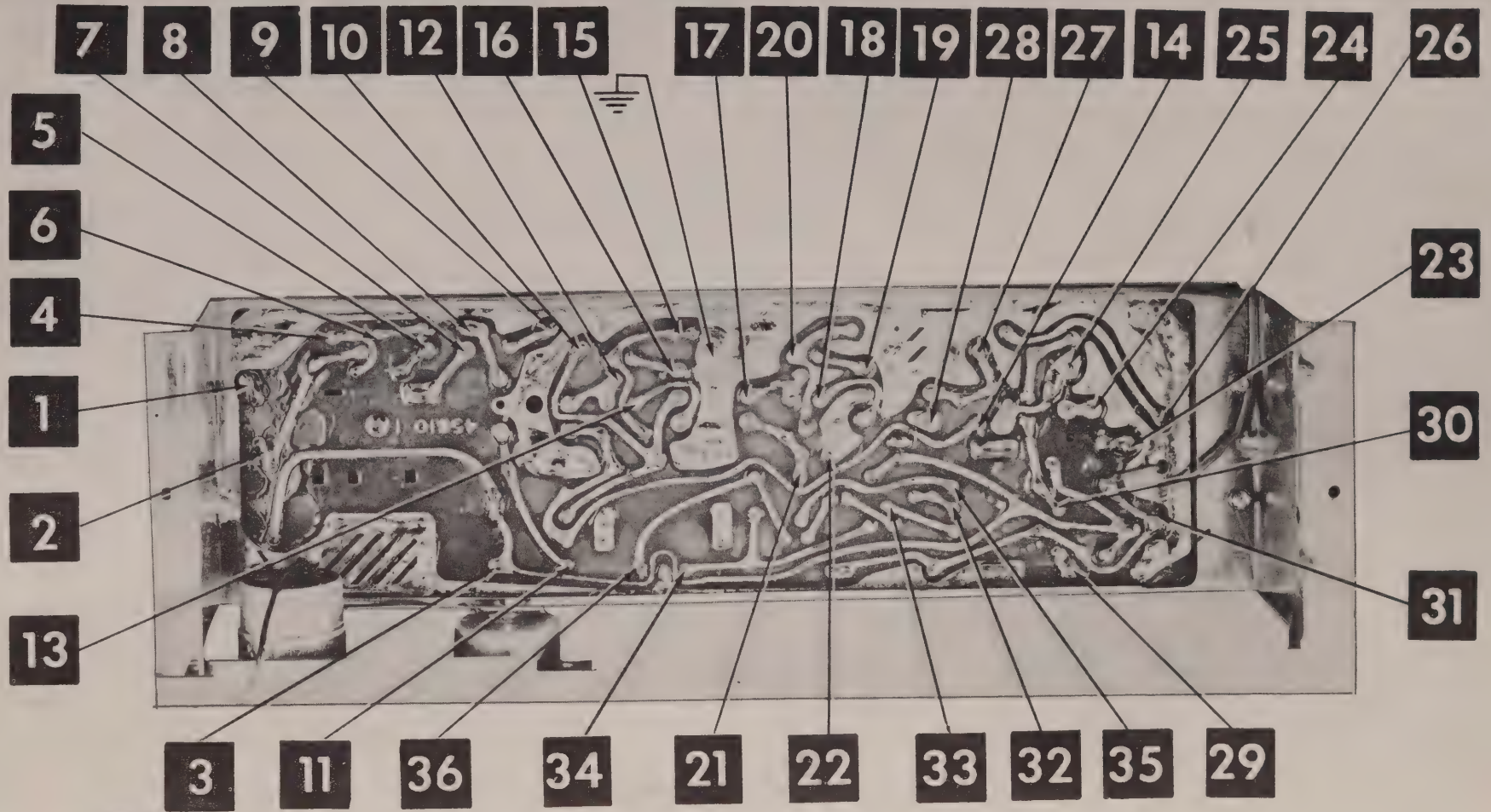
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	45468-67	3 Used
Cabinet Front Ass'y.	46226-67	Ivory
Cabinet Back	45433-502	Gray
Pointer	45457-1	

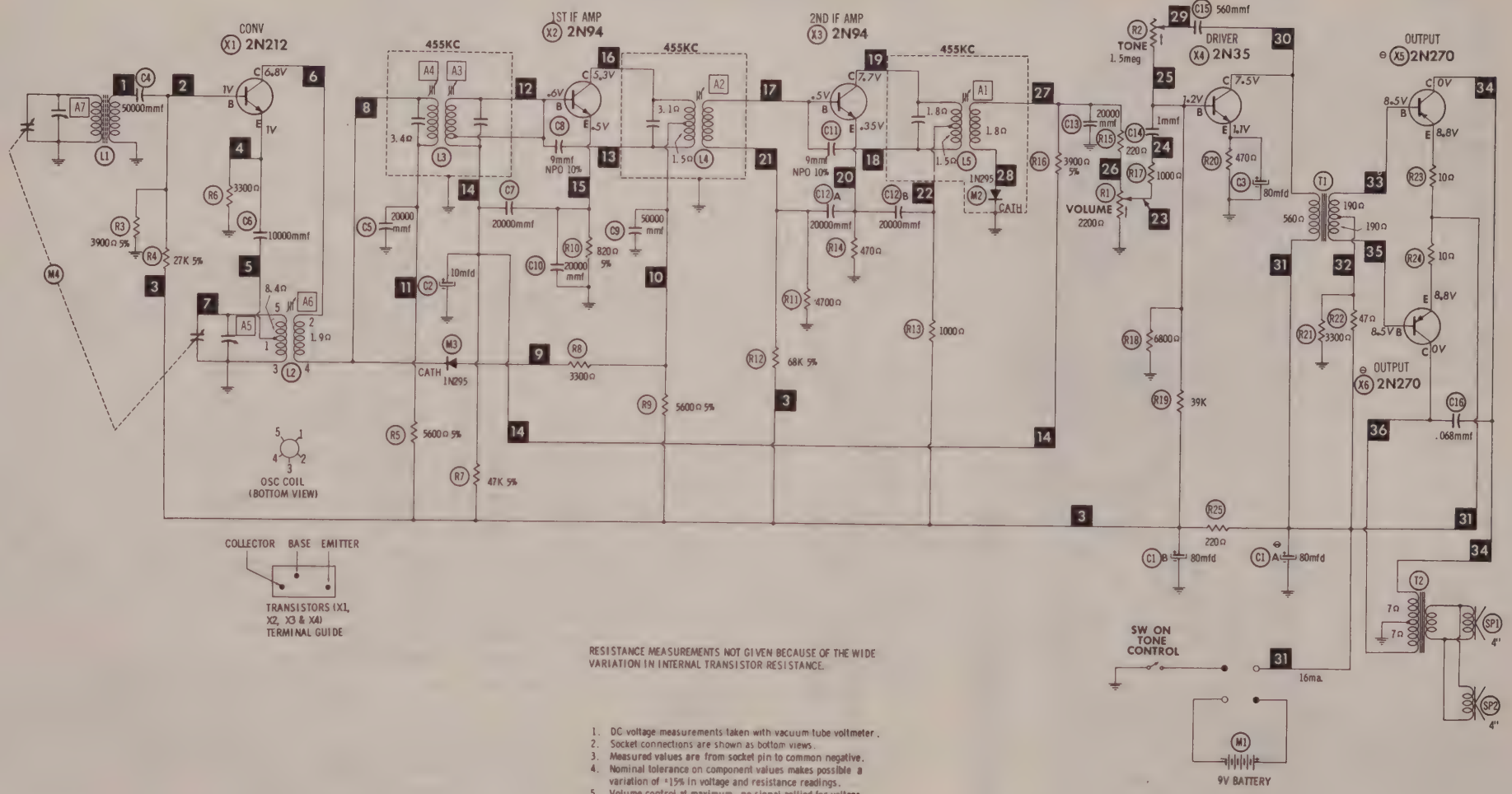
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors



A Howard W. Sams CIRCUITRACE* Photo

PRINTED BOARD



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

© Howard W. Sams & Co., Inc. 1959

ARVIN MODEL 3588 (Ch. 1.45200)

PHOTOFACT* Folder

EIA MEMBER

DYNAMIC
MODEL 2000PA

DYNAMIC
MODEL 2000PA

DYNAMIC
MODEL 2000PA

TRADE NAME	Dynamic Model 2000PA
MANUFACTURER	Dynamic Electronics - N. Y., Inc., 73-39 Woodhaven Blvd., Forest Hills, L. I., N. Y.
TYPE SET	AC Operated 3 Channel Audio Amplifier
TUBES	Five
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 58 Watts, .66 Amp @ 117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H854

DATE 3-59 SET 433 FOLDER 6

SET 433 FOLDER 6

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Phono Preamp. -AF Amp	12AX7	
V2	AF Amp. -Phase Inv.	12AX7	
V3	Output	6AQ5A	

ITEM No.	USE	TYPE	NOTES
V4	Output	6AQ5A	
V5	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DYNAMIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	400		PR4-200	BBRQ0174	WQ795		Q-061	TVA-4750
B	40	400							
C	20	400							
C2	4	400		PRS450V4	BR445	TC70	TD-4-450	MT-4504	TVA-1702
C3	100	25		PRS25V100	BBR100-25	TC2501	TD-100-25	MTH-2510	TVA-1207

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

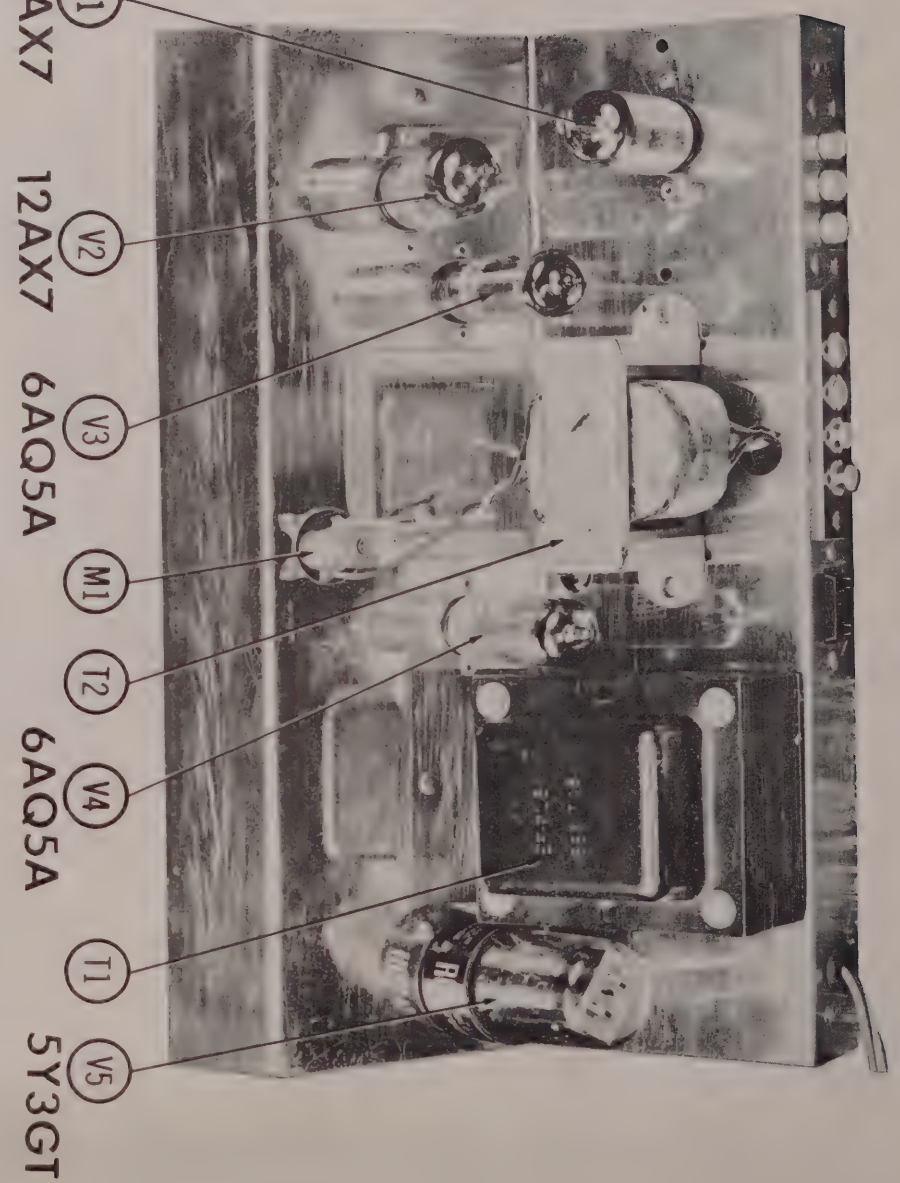
ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DYNAMIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	330			SI330	D6-331	LT6T33	UC-5333	5GA-T33	
C5	.01	400		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C6	51								
C7	560			SI560	D6-561	LT6T56	UC-5356	5GA-T56	
C8	.0047	400		P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C9	100			SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C10	.0047	400		P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C11	300			SI300	D6-301	LT6T3	UC-533	5GA-T3	
C12	.022	400		P488N-022		CUB4S22	GEM-4122	4TM-S22	
C13	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C14	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C15	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C16	330			SI330	D6-331	LT6T33	UC-5333	5GA-T33	
C17	.25	400		P488N-25		CUB4P25	GEM-4025	4TM-P25	
C18	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C19	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DYNAMIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	CM20395	BT-72	A47F-1meg	Q18-137X	UT-440	Loudness, Tap ⓐ 250K
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	U8-26	
R2A	25K	½	CM20396	B-26	A47-25K-S	Q11-120	U29	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	250K	½	CM20397	B-51	A47-250K-S	Q13-130	U44	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R4A	100Ω	2(WW)	CM21465	WN-101	A43-100	W11-084	R100L	Hum Adjust
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	

* Use KR with CRL "Red Label" controls and KB with "Blue Label" controls.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	DYNAMIC PART No.	NOTES
R5	27K			
R6	3300Ω			
R7	100K			
R8	56K			
R9	330K			
R10	220K			
R11	2.2meg			
R12	47K			
R13	2200Ω			
R14	220K			
R15	68K			
R16	22K			
R17	47K			

ITEM No.	RATING OHMS	RATING WATT	DYNAMIC PART No.	NOTES
R18	220K			
R19	390Ω			
R20	56K			
R21	220K			
R22	1500Ω			
R23	2700Ω			
R24	470K			
R25	15K			
R26	470K			
R27	270Ω	2		
R28	1000Ω	2		
R29	33K	1		

① Some versions use 330K in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA DYNAMIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .66A	540 VCT @ .075A	5V @ 1.8A	EF-215	P9205	P-3051		PM8403	24R09	R-8B
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 1.5A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA DYNAMIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6500Ω CT	16Ω Taps @ 8Ω, 4Ω	DD-155	Z1011	A-2905	AU-609	A-3870	24S55	S-55X	

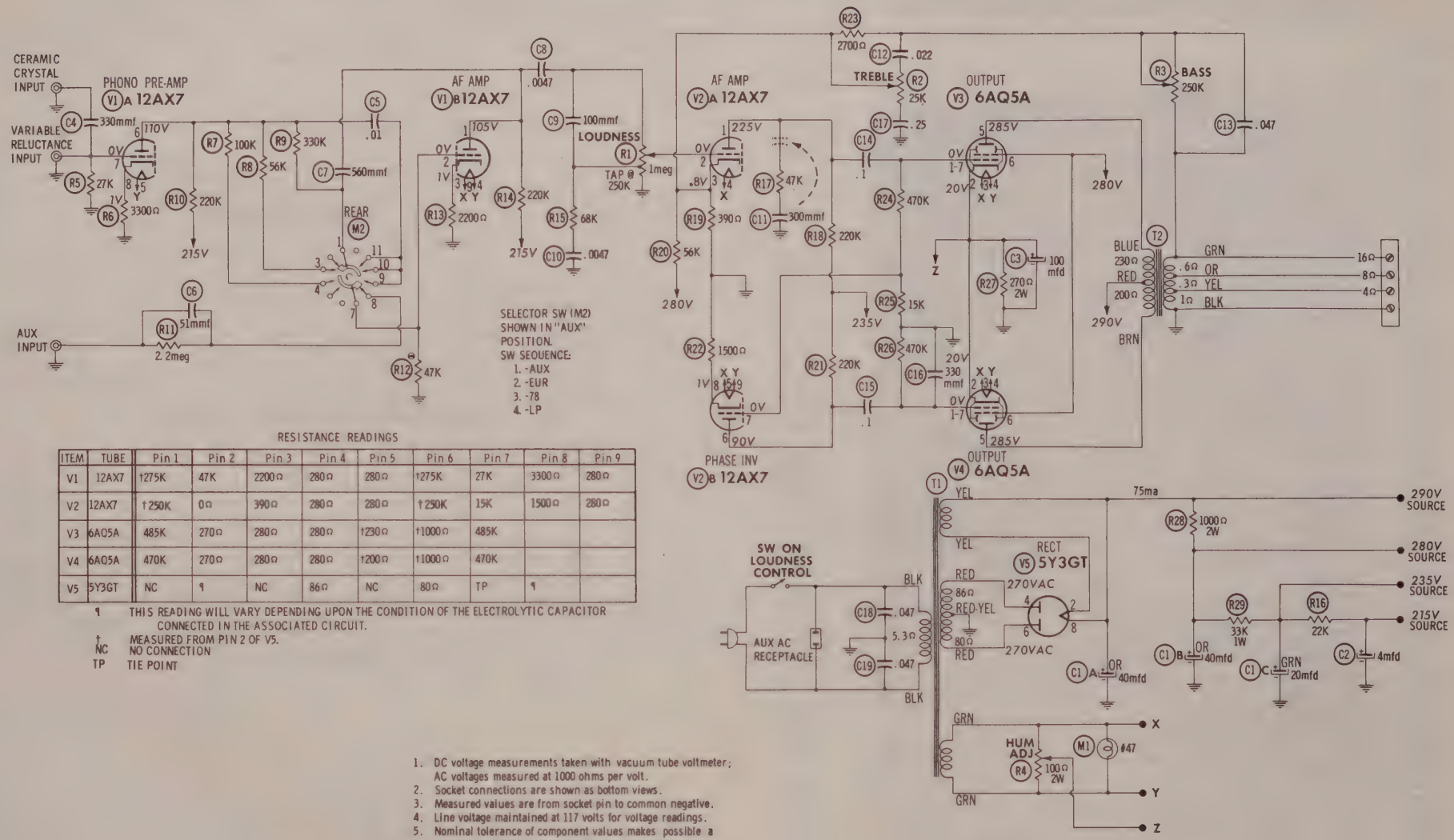
MISCELLANEOUS

ITEM No.	PART NAME	DYNAMIC PART No.	NOTES
M1	Lamp		#47
M2	Switch		Compensator (4 Position, Rotary, Wafer Type)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†275K	47K	2200Ω	280Ω	280Ω	†275K	27K	3300Ω	280Ω
V2	12AX7	†250K	0Ω	390Ω	280Ω	280Ω	†250K	15K	1500Ω	280Ω
V3	6AQ5A	485K	270Ω	280Ω	280Ω	†230Ω	†1000Ω	485K		
V4	6AQ5A	470K	270Ω	280Ω	280Ω	†200Ω	†1000Ω	470K		
V5	5Y3GT	NC	¶	NC	86Ω	NC	80Ω	TP	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

† MEASURED FROM PIN 2 OF V5.

NC NO CONNECTION

TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1959

DYNAMIC MODEL 2000PA

PHOTOFACT* Folder with CIRCUITRACE*

TRADE NAME	Fanfare Model R522VM
MANUFACTURER	Fanon Electronic Sales Corp., 919 Park Place, Brooklyn 13, N. Y.
TYPE SET	AC Operated AM Receiver With 4 Speed Automatic Record Changer
TUBES	Five
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 25 Watts, .28 Amp @ 117 Volts AC
TUNING RANGE—BROADCAST	535 - 1620KC

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE V-M 1200A - PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1, A2, A3, A4..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to antenna stator lug (rear section of tuning gang). Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001mfd to reduce hum modulation.
2.	"	"	1600KC	1600KC	"	A5	"
3.		Loop	1400KC	Tune for 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

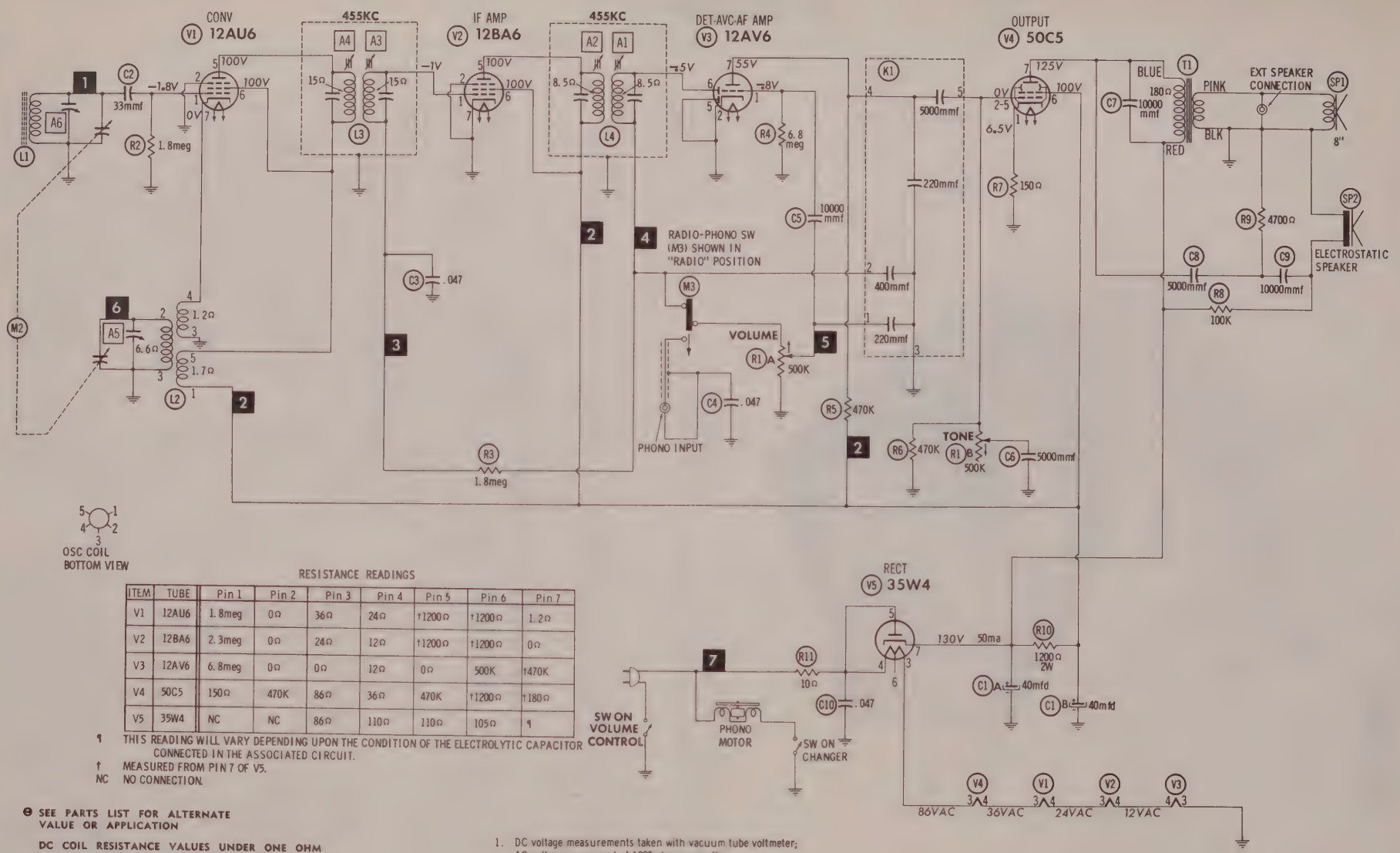
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H871

FANFARE
MODEL R522VM

FANFARE
MODEL R522VM

SET 433 FOLDER 7



OSC COIL BOTTOM VIEW

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AU6	1.8meg	0Ω	36Ω	24Ω	†1200Ω	†1200Ω	1.2Ω
V2	12BA6	2.3meg	0Ω	24Ω	12Ω	†1200Ω	†1200Ω	0Ω
V3	12AV6	6.8meg	0Ω	0Ω	12Ω	0Ω	500K	†470K
V4	50C5	150Ω	470K	86Ω	36Ω	470K	†1200Ω	†180Ω
V5	35W4	NC	NC	86Ω	110Ω	110Ω	105Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

† MEASURED FROM PIN 7 OF V5.

NC NO CONNECTION.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

©Howard W. Sams & Co., Inc. 1959

FANFARE MODEL R522VM

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12AU6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amp.	12AV6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	FANFARE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150		PRS150V4040	BBRD4415	TCD48	TDLD-7	CADP-512	TVA-2445
B	40	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	FANFARE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	33			SI33	D6-330	LT6Q33	UC-5433	5GA-Q33	
C3	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C4	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C5	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C6	5000			BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C7	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C8	5000			BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C9	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C10	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FANFARE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	1/2	DS5160	F1-41			■ UE3903S	Volume
B	500K	1/2		R2-41				Tone
C	Switch			KB-1 or KR-1*				

* Use KR with CRL "Red Label" controls and KB with "Blue Label" controls.
■ "STA-LOC" Equivalent: FB55A, OS875, RU55A, IS1250, US-41

RESISTORS

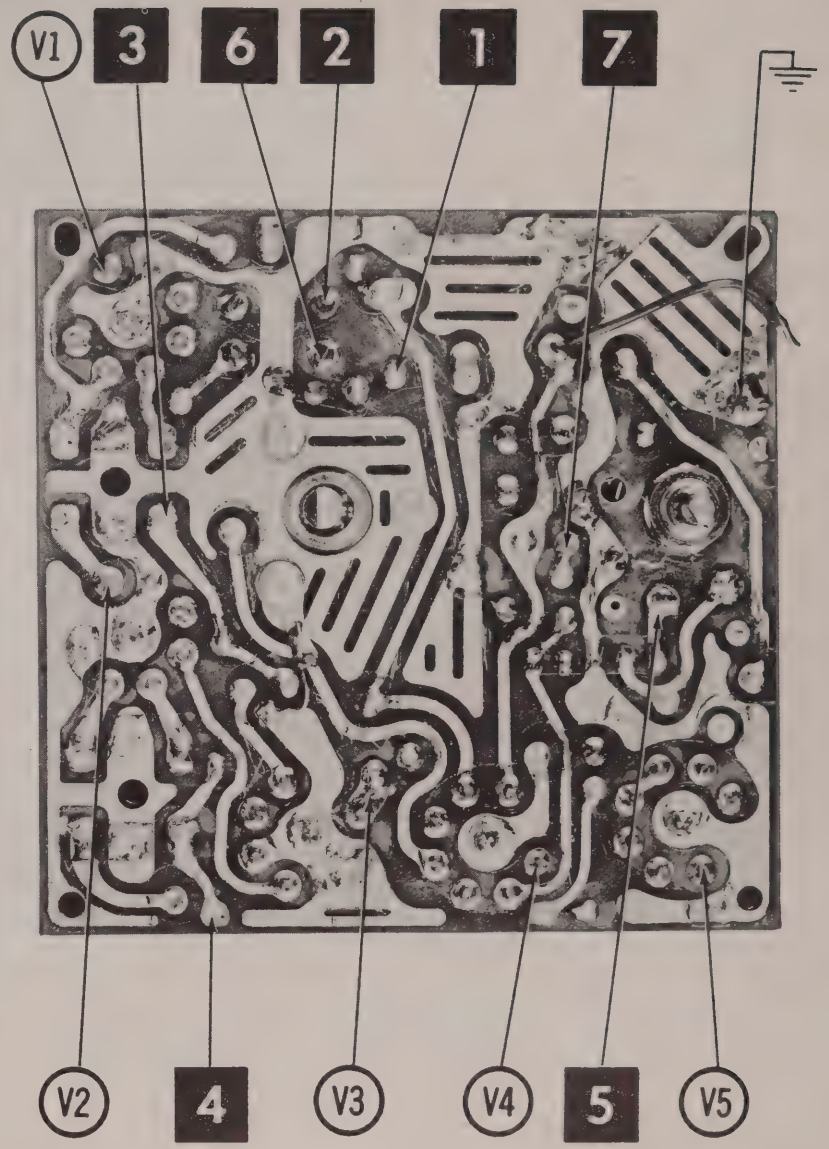
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		FANFARE PART No.	NOTES
	OHMS	WATT		
R2	1.8meg			
R3	1.8meg			
R4	6.8meg			
R5	470K			
R6	470K			
R7	150Ω			
R8	100K			
R9	4700Ω			
R10	1200Ω	2		
R11	10Ω			

PRINTED BOARD

A Howard W. Sams CIRCUITRACE* Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



FANFARE
MODEL R522WM

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		FANFARE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loopstick						
L2	Osc. Coil						
L3	Input IF		16-6780	BC-356	13-PC1	RF-4	
L4	Output IF		16-6780	BC-357	13-PC2	RF-4	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	FANFARE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2500Ω	3-4Ω	OPC-3	Z1101 ①	A-3025①	AU-605①	A-3332 ①	24S53 ①	S-12X ①	①Rotate 90° and use original channel frame.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	FANFARE PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	LSH75	8A21	
SP2	3"	Electrostatic				

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	FANFARE PART No.	REPLACEMENT DATA
K1	Audio Coupling Circuit	220mmf, 400mmf, 220mmf, 5000mmf		

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	FANFARE PART No.	ASTATIC PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		81-T				

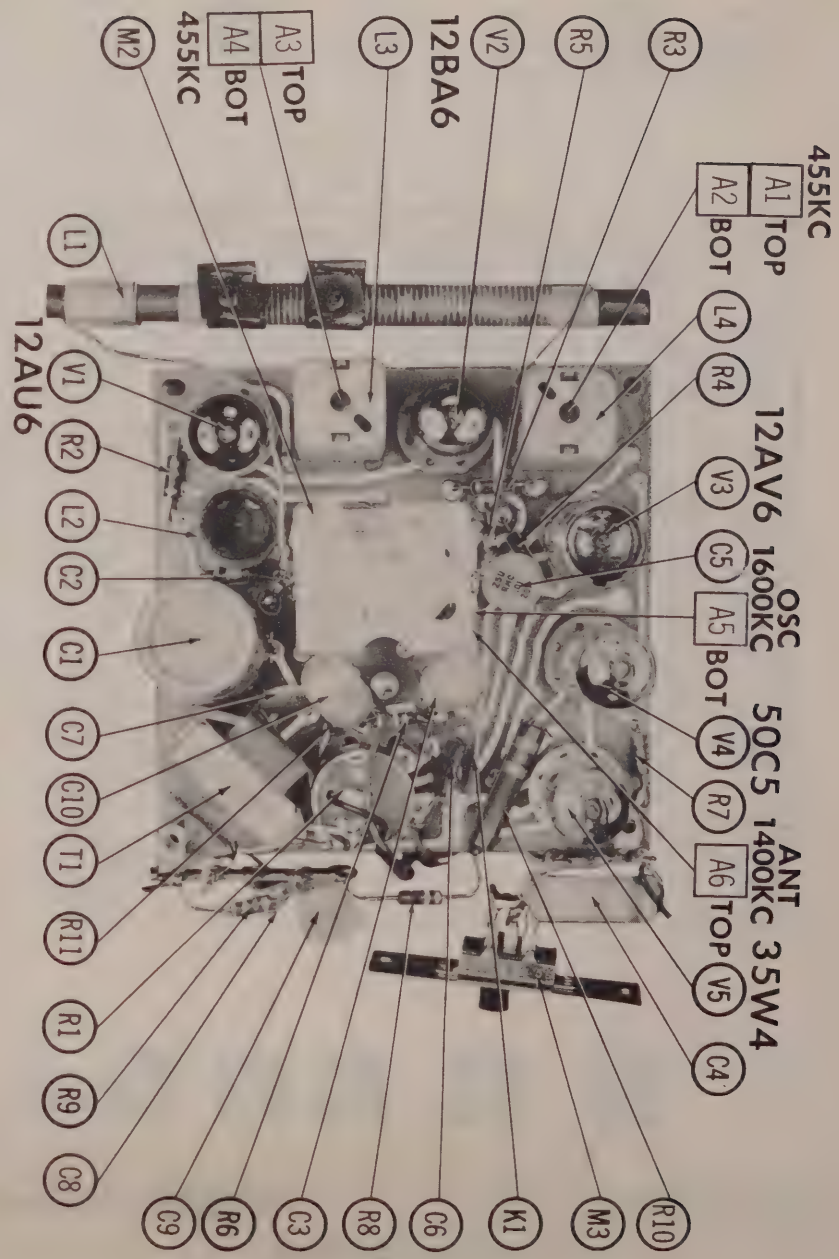
MISCELLANEOUS

ITEM No.	PART NAME	FANFARE PART No.	NOTES
M2	Tuning Cap.		2 Gang
M3	Switch		Radio-Phono (DPST, Slide Type)
	Printed Board	REA188-1	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—TOP VIEW

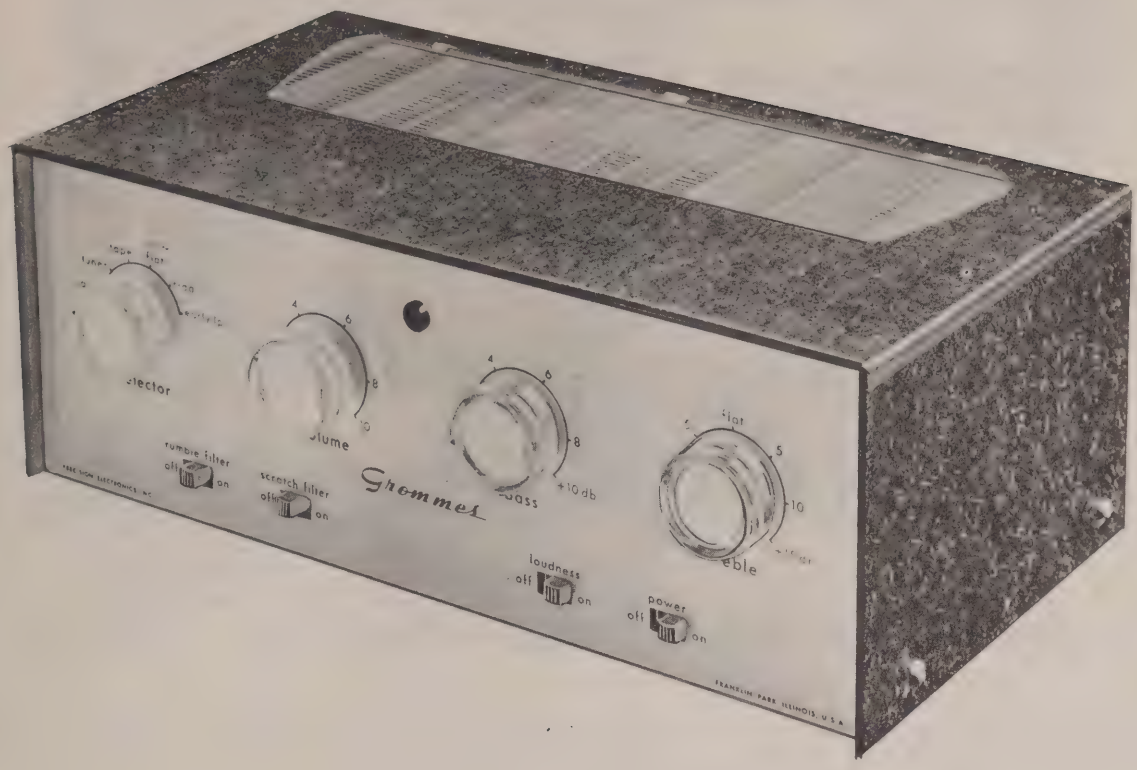


PHOTOFACT* Folder

EIA

GROMMES
MODEL 10PG8

GROMMES
MODEL 10PG8



GROMMES
MODEL 10PG8

TRADE NAME	Grommes Model 10PG8
MANUFACTURER	Precision Electronics, Inc., 9101 King Ave., Franklin Park, Illinois
TYPE SET	AC Operated 5 Channel Audio Amplifier
TUBES	Five
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 55 Watts, .55 Amp @ 117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H820

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	Preamplifier	12AX7/ ECC83
V2	AF Amp. -Phase Inv.	12AX7/ ECC83
V3	Output	6BQ5/ EL84

ITEM No.	USE	TYPE
V4	Output	6BQ5/ EL84
V5	Rectifier	6BW4/ EZ80

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	GROMMES PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	400		AFH4-117-48	D0476			Q-250	TVLS-4657.3*
B	■30	350			BR4045			MTD-4510	
C	▲10	300							
D	20	25							
C2A	■10	250		AFH3-86-90	B0200	FP231	TMD-239	D-105	TVLS-3509*
B	100	15			BBR100-15	TT15X100	TD-100-15	MTH-1510	
C	▲10	250	①						

① C2C is not used.
* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	GROMMES PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	100			SI100	D6-101	LT6T1	UC-531	5GA-T1	
C4	100			SI100	D6-101	LT6T1	UC-531	5GA-T1	
C5	1500			BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	
C6	800			BPD-0008	DD-801	L10T8		5GA-T8	
C7	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C8	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C9	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C10	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C11	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C12	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C13	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C14	51			SI51	TCZ-51	CTA6Q51C			
C15	5000			BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C16	250			BPD-00025	DD-251	L10T25	UC-5325	5GA-T25	
C17	3000			BPD-003	DD-302	BYA10D3	UC-523	5HK-D3	
C18	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C19	250			BPD-00025	DD-251	L10T25	UC-5325	5GA-T25	
C20	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C21	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C22	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	①

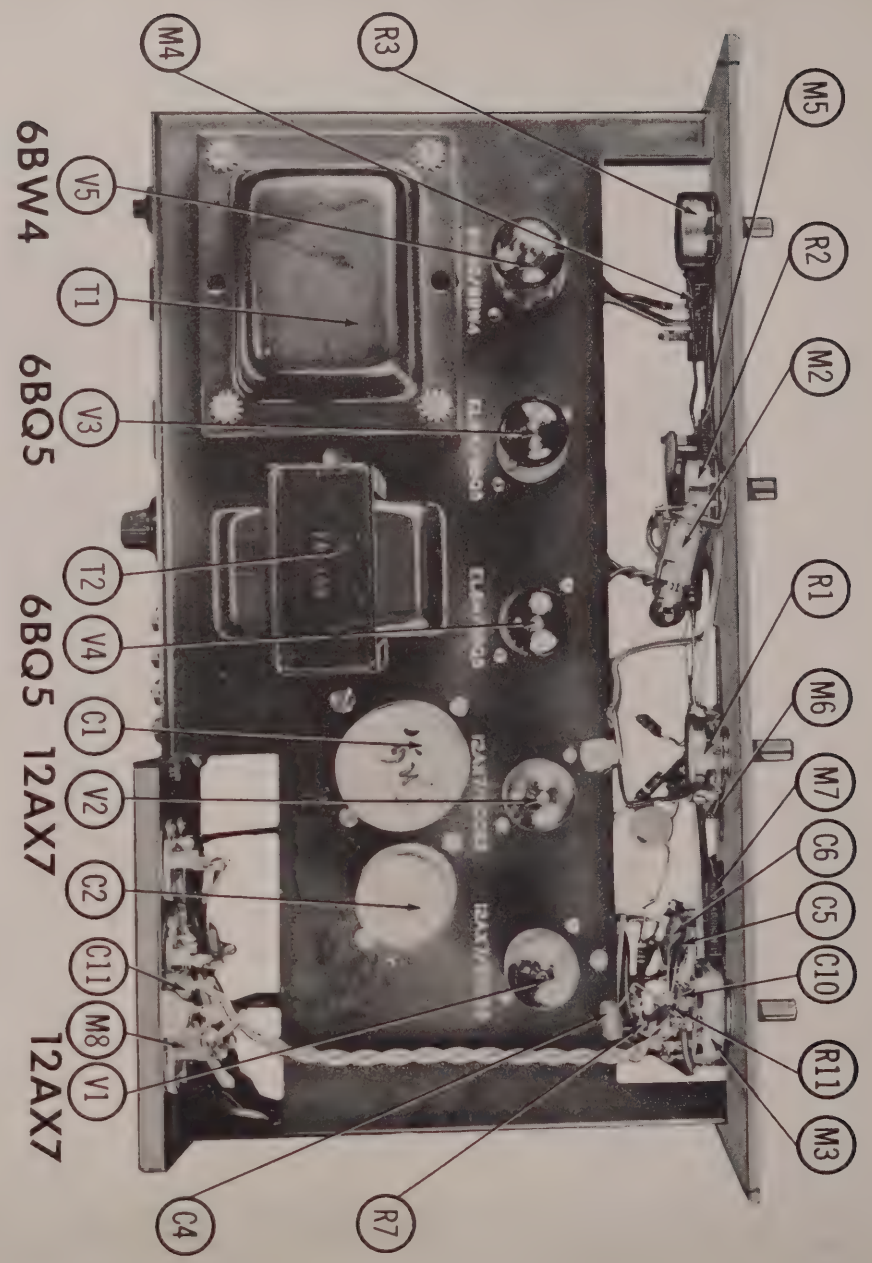
① Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	GROMMES PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	MLC500K2T	BT-160		Q18-133XX	UDT-283	Volume, Taps @ 100K & 200K
B	Shaft			Not Req.		Not Req.	Not Req.	
R2A	2meg	½	BC-2M	B-76 †	A47-2meg-Z	Q13-139	U55	Bass
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
R3A	2meg	½	BC-2M	B-76 †	A47-2meg-Z	Q13-139	U55	Treble
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	

† Use an extra mounting nut behind mounting surface.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	GROMMES PART No.	NOTES
R4	47K			
R5	100K			
R6	1000Ω			
R7	100K			
R8	3.3meg			
R9	100K			
R10	4.7meg			
R11	3.3meg			
R12	47K			
R13	22K			
R14	470K			
R15	47K			
R16	10K			
R17	100K			

Note 1. Some versions use 10K in this application.

ITEM No.	RATING OHMS	RATING WATT	GROMMES PART No.	NOTES
R18	47K			
R19	47Ω			
R20	1000Ω			
R21	2700Ω			Note 1
R22	220K			
R23	47K			
R24	220K			
R25	1000Ω			
R26	220K			
R27	270K			
R28	200Ω	7		Note 2
R29	1000Ω			
R30	5600Ω	2		

Note 2. Some versions may use 150Ω in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA GROMMES PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .55A	640 VCT @ .060A	6.3VCT @ 2.7A	TP-9	P9305			PM8408	22R04	R-9B

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA GROMMES PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	7200Ω CT	16Ω Tap @ 8Ω 4Ω	T0-10B	Z1011	A-2904①	AU-609	A-3830	24S55		① Drill new mounting hole

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA GROMMES PART No. FUSE	GROMMES PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	1½A 250V			31201.5 (3AG 1½A 250V)	342001	AGC 1½	HKP

MISCELLANEOUS

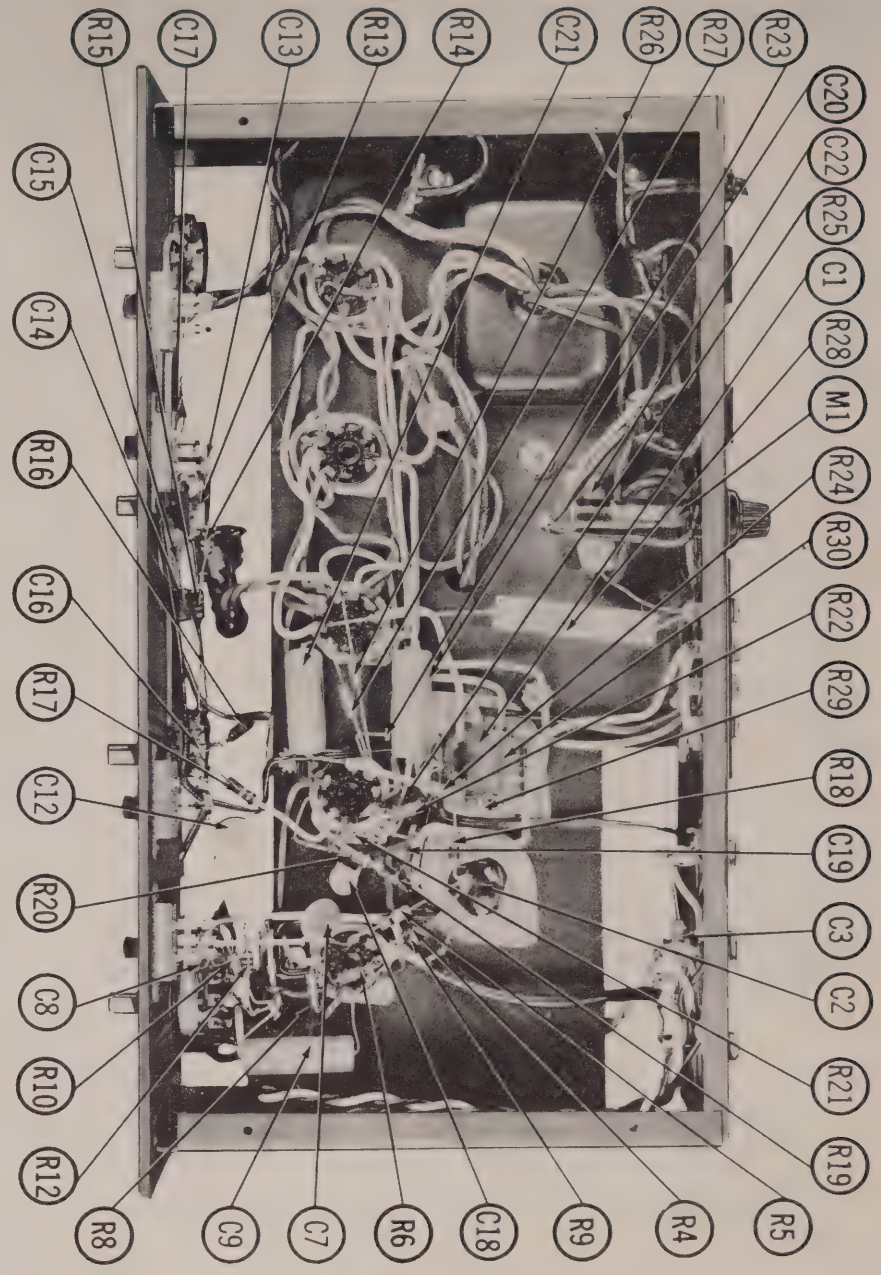
ITEM No.	PART NAME	GROMMES PART No.	NOTES
M2	Lamp		#51
M3	Switch		Input Selector (6 Position, Rotary, Wafer Type)
M4	Switch		Power, On-Off (SPST, Slide Type)
M5	Switch		Off-On-Loudness (SPDT, Slide Type)
M6	Switch		Scratch Filter (SPST, Slide Type)
M7	Switch		Rumble Filter (SPDT, Slide Type)
M8	Switch		Phono-Tape (DPDT, Slide Type)

WIRING DATA

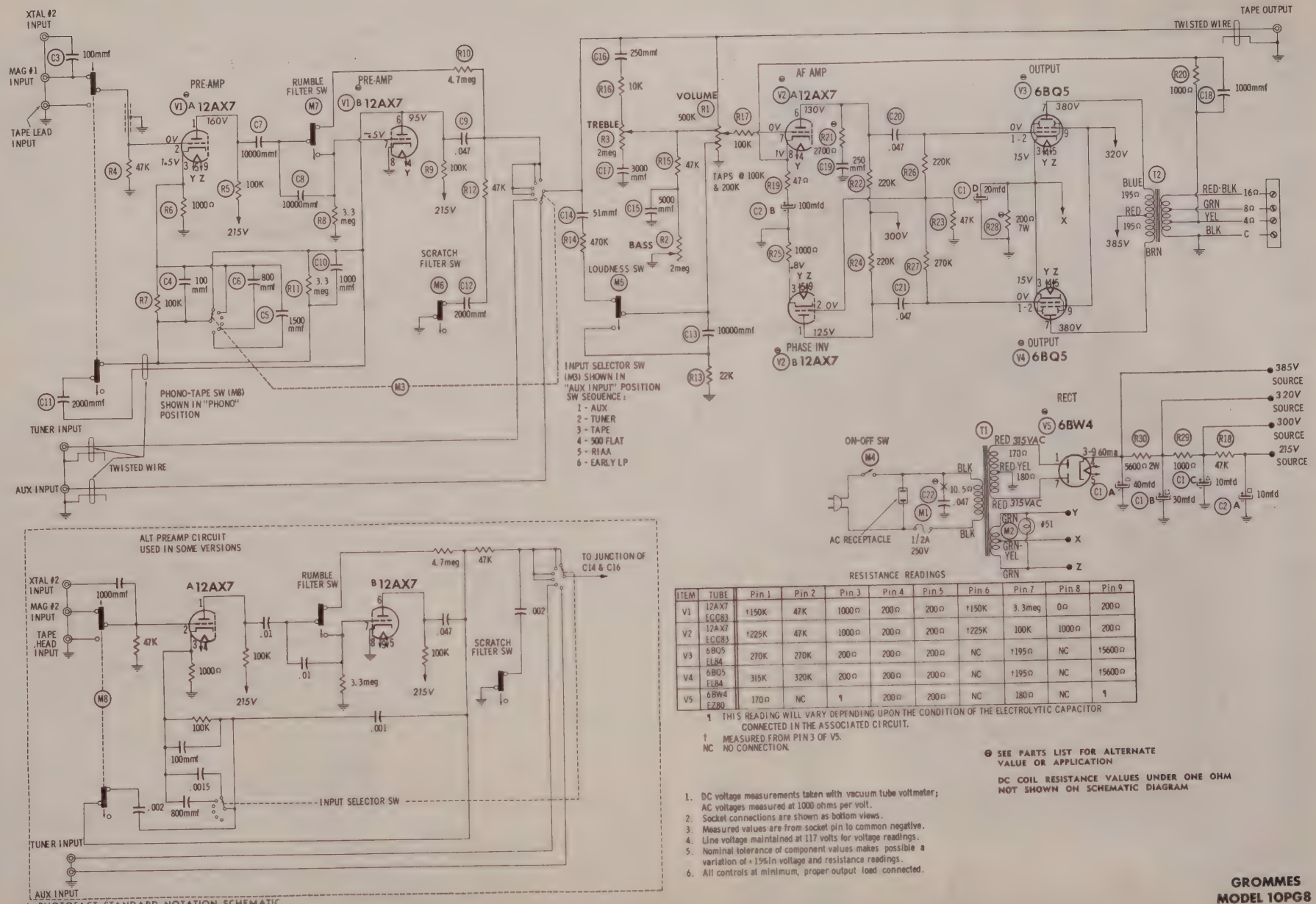
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW



GROMMES
MODEL 10PG8



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7 ECC83	†150K	47K	1000Ω	200Ω	200Ω	†150K	3.3meg	0Ω	200Ω
V2	12AX7 ECC83	†225K	47K	1000Ω	200Ω	200Ω	†225K	100K	1000Ω	200Ω
V3	6BQ5 EL84	270K	270K	200Ω	200Ω	200Ω	NC	†195Ω	NC	†5600Ω
V4	6BQ5 EL84	315K	320K	200Ω	200Ω	200Ω	NC	†195Ω	NC	†5600Ω
V5	6BW4 EZ80	170Ω	NC	¶	200Ω	200Ω	NC	180Ω	NC	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

† MEASURED FROM PIN 3 OF V5.

NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

GROMMES
MODEL 10PG8

PHOTOFACT* Folder with CIRCUITRACE*
EIA MEMBER

GUILD MODEL 785 "Grafonola"

GUILD MODEL
785 "Grafonola"

TRADE NAME	Guild Model 785 "Grafonola"
MANUFACTURER	Guild Radio & Television Corp., 460 Eucalyptus Ave., Inglewood, California
TYPE SET	AC Operated AM Receiver With 4 Speed Automatic Record Change
TUBES	Seven
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles
RATING	100 Watts, .94 Amp @117 Volts AC (Less Motor)
TUNING RANGE—BROADCAST	540 - 1620KC

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SIMILAR V-M 959 - PHOTOFACT SET 396 FOLDER 13.

ALIGNMENT INSTRUCTIONS

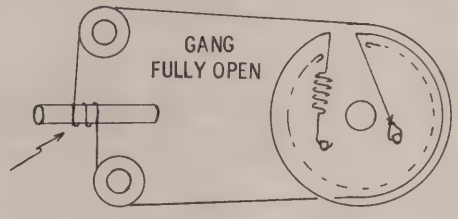
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1, A2, A3, A4..... GENERAL CEMENT #8727
WALSCO #2515
A5, A6..... GENERAL CEMENT #9291, 5016, 5015, 5004, 5008, 8607, 9294
WALSCO #2523, 2537, 2538, 2522, 2515, 2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	Highside to antenna stator lug of tuning gang. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1600KC	1600KC	"	A5	"
3.		Loop	1400KC	Tune for 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H830

SET 433 FOLDER 9

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	Converter	6BE6
V2	IF Amplifier	6BA6
V3	Pre-Amp. -AF Amp.	12AX7/ ECC83
V4	AF Amp. -Phase Inv.	12AX7/ ECC83
V5	Output	6BQ5/ EL84
V6	Output	6BQ5/ EL84
V7	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA GUILD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■40	450		AFH4-70-10	B0450	FP385	TMT-140	D-235	TVLS-3744.4*
B	▲40	450			BR100-25	TC77	TD-30-450	MTH-2510	
C	▲100	25							
C2A	▲20	450		AFH2-51	B0400	FP234	TMD-50	D-215	TVL-2755
B	■20	450							

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA GUILD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	470			BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C4	.05	200		P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C5	47								N330
C6	10			DI-00001	DD-100	L10Q1	UC-541	5GA-Q1	Note 1
C7	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C8	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C9	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C10	.047	400		P488N-047		BC6S47J	ACE6147	4SE-S47	
C11	.1	400		P488N-1		BC6P1J	ACE401	4SE-P10	
C12	20000			BPD-02	DD-203	BYB6S2		5HK-S2	
C13	.1	400		P488N-1		BC6P1J	ACE401	4SE-P10	
C14	100			DI-0001	DD-101	L10T1	UC-531	5GA-T1	
C15	.047	400		P488N-047		BC6S47J	ACE6147	4SE-S47	
C16	.047	400		P488N-047		BC6S47J	ACE6147	4SE-S47	
C17	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA GUILD PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	VRS-1MT-PR	ABT-73	A47F4-1meg	Q13-137X	UT-440	Loudness Tap@200K
B	Shaft			AK-11	FS-5	C3 †	DS-36 ††	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	
R2A	500K	½	VR-500KT-PR	ABT-65	A47F-1meg	Q19-133X	UT-431	Treble, Tap@250K
B	Shaft			AK-11	FS-5	C3 †	DS-36 ††	
R3A	1meg	½	VR-1ML-PR-2	AB-69	A47-1meg-S	Q11-137	U54	Bass
B	Shaft			AK-11	FS-5	C3 †	DS-36 ††	
R4A	100Ω	2(WW)	CM19654	WN-101	A43-100	W11-084	R100L	Hum Balance
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	

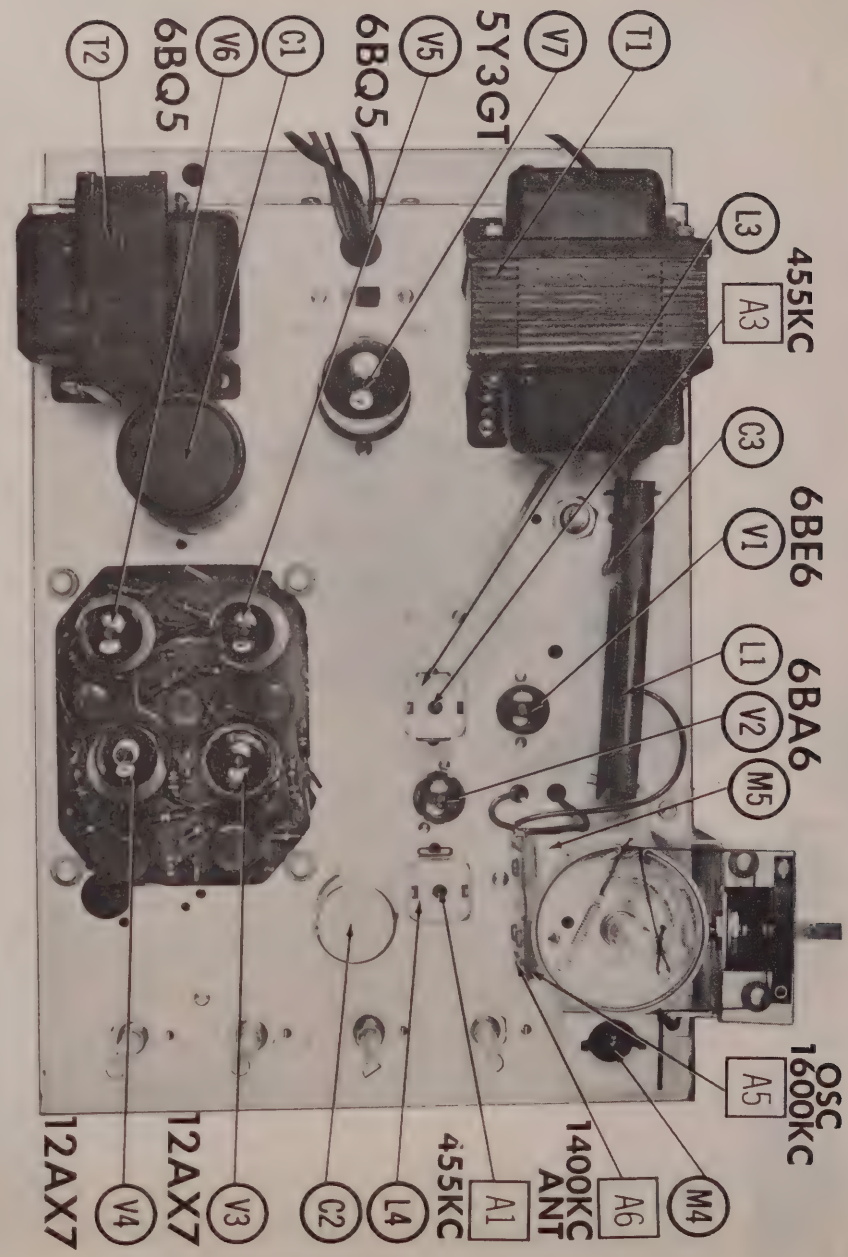
* Use KR with CRL "Red Label" controls and KB with "Blue Label" controls.
† Shaft coupler, saw off portion of shaft from original control as needed.
†† Special extension shaft, follow manufacturer's instructions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	GUILD PART No.	NOTES
R5	22K			
R6	15K	1		Note 1
R7	2.2meg			
R8	220Ω			
R9	100K			Note 2
R10	470K			Note 2
R11	270K			
R12	22K			
R13	3.3meg			
R14	47K			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	GUILD PART No.	NOTES
R15	47K			
R16	1500Ω			
R17	47K			
R18	100K			
R19	1500Ω			
R20	470K			
R21	3300Ω			
R22	1000Ω			
R23	15K			
R24	220K 1%			
R25	220K 1%			

ITEM No.	RATING OHMS	RATING WATT	GUILD PART No.	NOTES
R26	470K 1%			
R27	1000Ω			
R28	220Ω			
R29	470K			
R30	1000Ω			
R31	220Ω			
R32	130Ω			
R33	470Ω	1		
R34	4700Ω			
R35	22K			
R36	100K			

Note 1. A 3 watt resistor is used when heat sink is omitted.
Note 2. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA GUILD PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loopstick		14-1055 *				* Drill mount. hole
L2	Osc. Coil		16-6758	BC-352	12-C1	RF-1	
L3	Input IF		16-6758	BC-353	12-C2	RF-2	
L4	Output IF						

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA GUILD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @.94A	600 VCT @.150A	5V @1.8A	TP-3115-PR						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @2.9A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA GUILD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	9000Ω CT	1Ω Tap @ .75Ω	TA0-8K1-PR	Z1011 ①	A-2904 ①	AU-609 ①	A-3870 ①	26S46 ①	S-55X ①	① Drill new mounting holes

SPEAKER

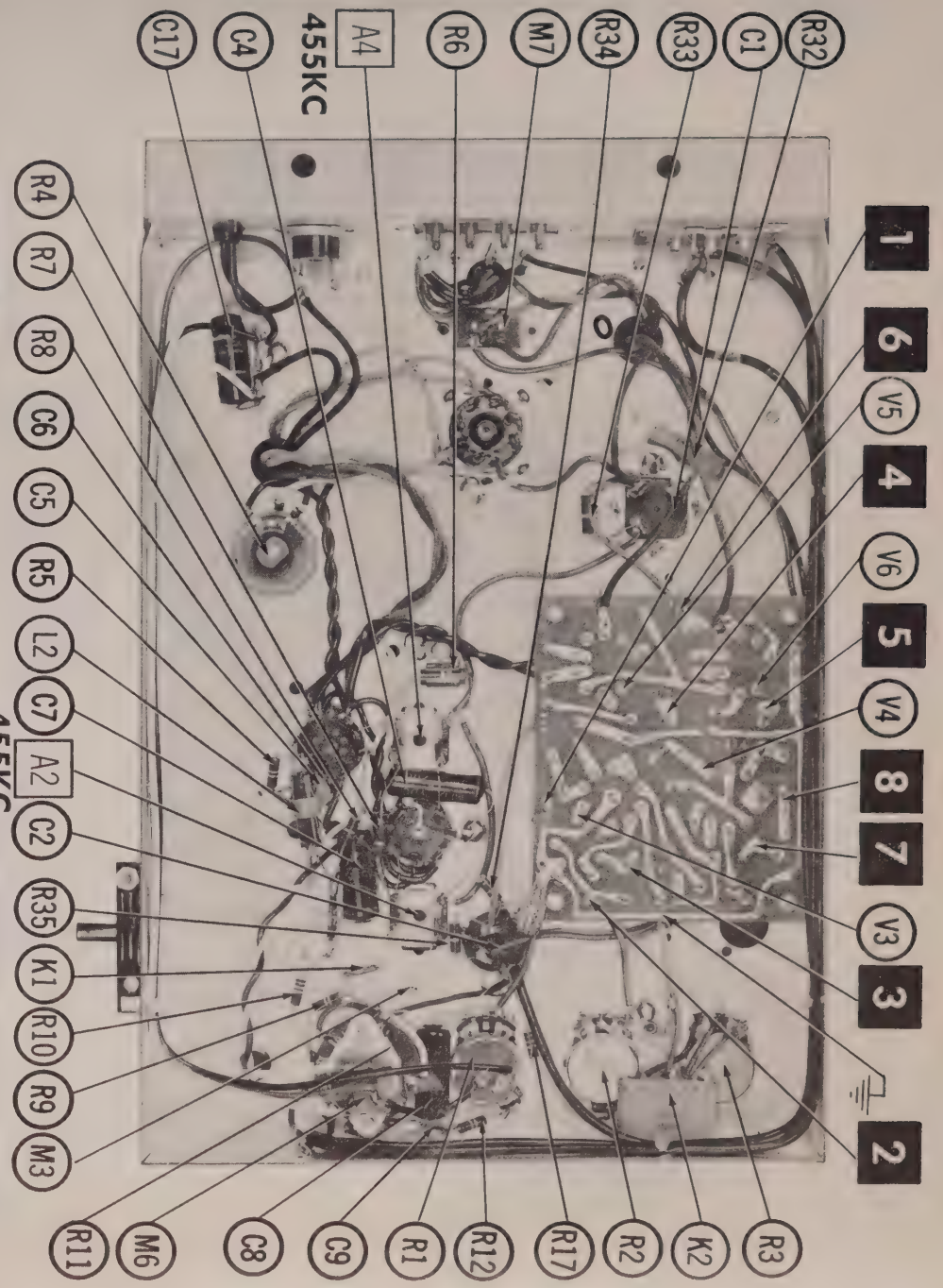
ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA GUILD PART No.	QUAM PART No.	NOTES
SP1	6"x9"	PM	3-4Ω	92900G	69A3	Parallel And Phase All Speakers
SP2	6"x9"	PM	3-4Ω	92901G	69A3	
SP3	5"	PM	3-4Ω		5A15TZ3.4	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	GUILD PART No.	REPLACEMENT DATA	
K1	Diode RF Filter	100mmf, 100mmf, 47K		Aerovox Centralab Cornell-Dubilier Sprague	PA-97-1 PC-50 111TM1 D-1
K2	Tone Compensation Circuit	4700mmf, 4700mmf, 100mmf, 100K, 100K, 470K, 1000Ω		Centralab	PC-190

A Howard W. Sams CIRCUITRACE* Photo

CHASSIS—BOTTOM VIEW



ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	GUILD PART No.	ASTATIC PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		89-TB				

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	GUILD PART No.	JENSEN PART No.	WALCO PART No.	
M2		† S-61 or †♦ S-61SD or ♦ S-61D	† W-77TPS or †♦ W-77DS or ♦ W-77TPD	† Jewel ♦ Diamond

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		GUILD PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N48		1N48	1N34A	Detector (Pigtail)

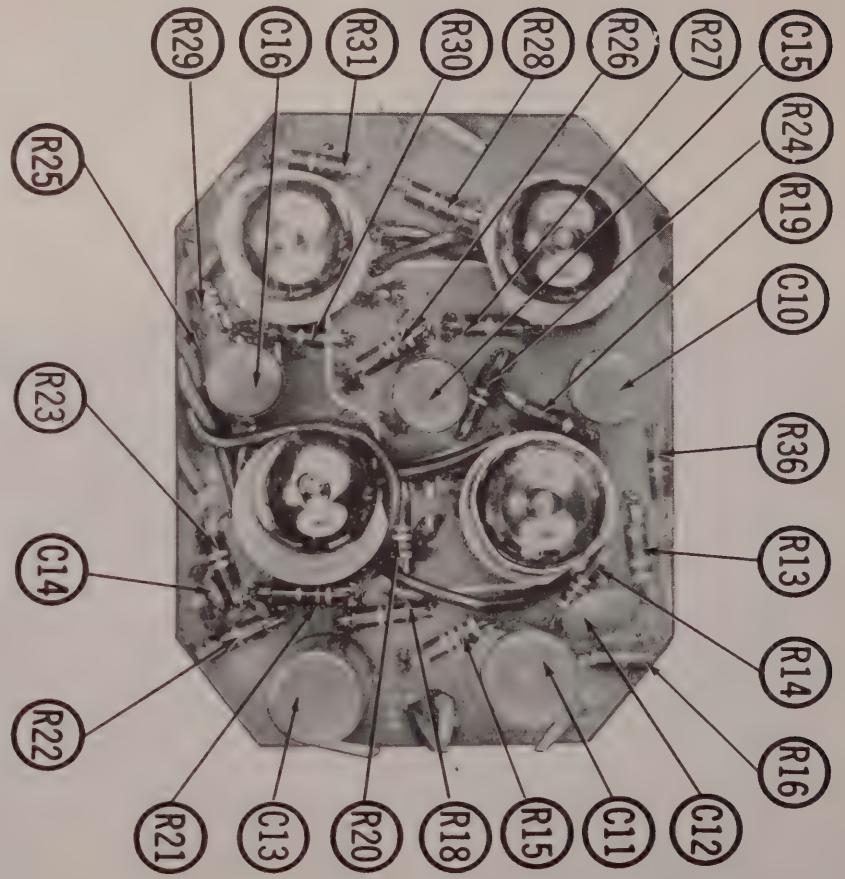
MISCELLANEOUS

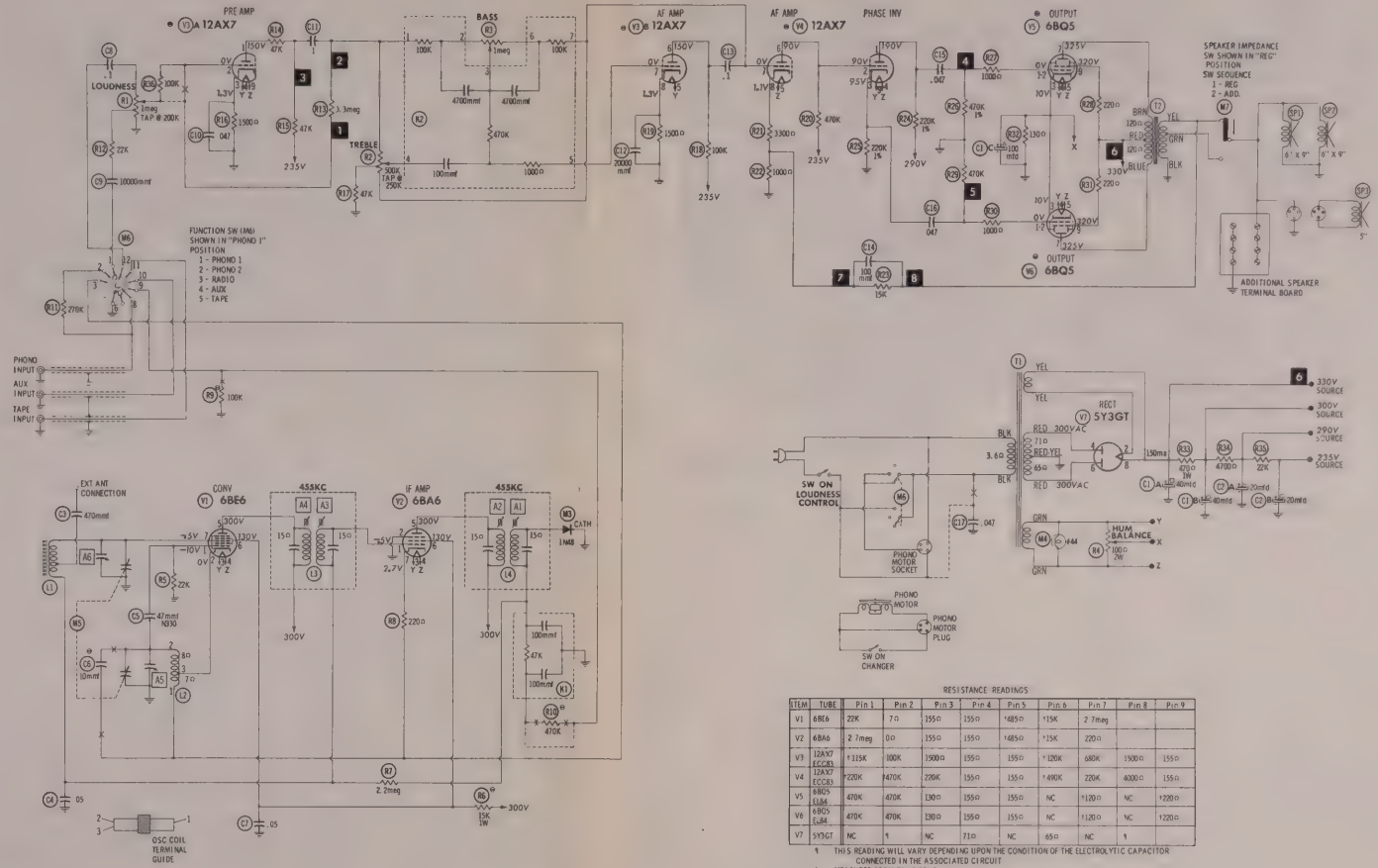
ITEM No.	PART NAME	GUILD PART No.	NOTES
M4	Lamp		#44
M5	Tuning Cap.		2 Gang, Ant. 18-406mmf, Osc. 7-166mmf
M6	Switch		Input Selector (5 Position, Rotary, Wafer Type)
M7	Switch		Speaker Impedance (SPDT, Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PRINTED BOARD





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BE6	†22K	7Ω	155Ω	155Ω	†685Ω	†15K	2.7meg		
V2	6BA6	2.7meg	0Ω	155Ω	155Ω	†685Ω	†15K	220Ω		
V3	12AX7 ECC83	†115K	100K	1500Ω	155Ω	155Ω	†120K	680K	1500Ω	155Ω
V4	12AX7 ECC83	†220K	†470K	220K	155Ω	155Ω	†490K	220K	4000Ω	155Ω
V5	6BQ5 EL84	470K	470K	130Ω	155Ω	155Ω	NC	†120Ω	NC	†220Ω
V6	6BQ5 EL84	470K	470K	130Ω	155Ω	155Ω	NC	†120Ω	NC	†220Ω
V7	5Y3GT	NC	¶	NC	71Ω	NC	65Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT

† MEASURED FROM PIN 8 OF V7.

NC NO CONNECTION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±5% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

©Howard W. Sams & Co., Inc. 1959

GUILD MODEL 785 "Grafonola"

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

HITACHI MODEL TH-621

HITACHI MODEL TH-621

HITACHI MODEL TH-621

TRADE NAME	Hitachi Model TH-621
MANUFACTURER	Electronic Utilities Co., Div. of The Sampson Co., 2244 S. Western Ave., Chicago 8, Illinois
TYPE SET	Battery Operated Portable Transistorized AM Receiver
POWER SUPPLY	9 Volts DC
TUNING RANGE—BROADCAST	540 - 1620KC
RATING	4.6MA@9 Volts DC (No Signal, Min. Volume) 5.5MA@9 Volts DC (Signal, Normal Volume)

TO OPEN CASE - INSERT COIN IN BOTTOM SLOT AND TWIST.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1, A2, A3, A5..... GENERAL CEMENT #9294, 8195, 9291, 8728, 8275
WALSCO #2534, 2520, 2522, 2537, 2538

A4, A6..... GENERAL CEMENT #8276, 5066, 8290, 5003, 6098, 9087
WALSCO #2525

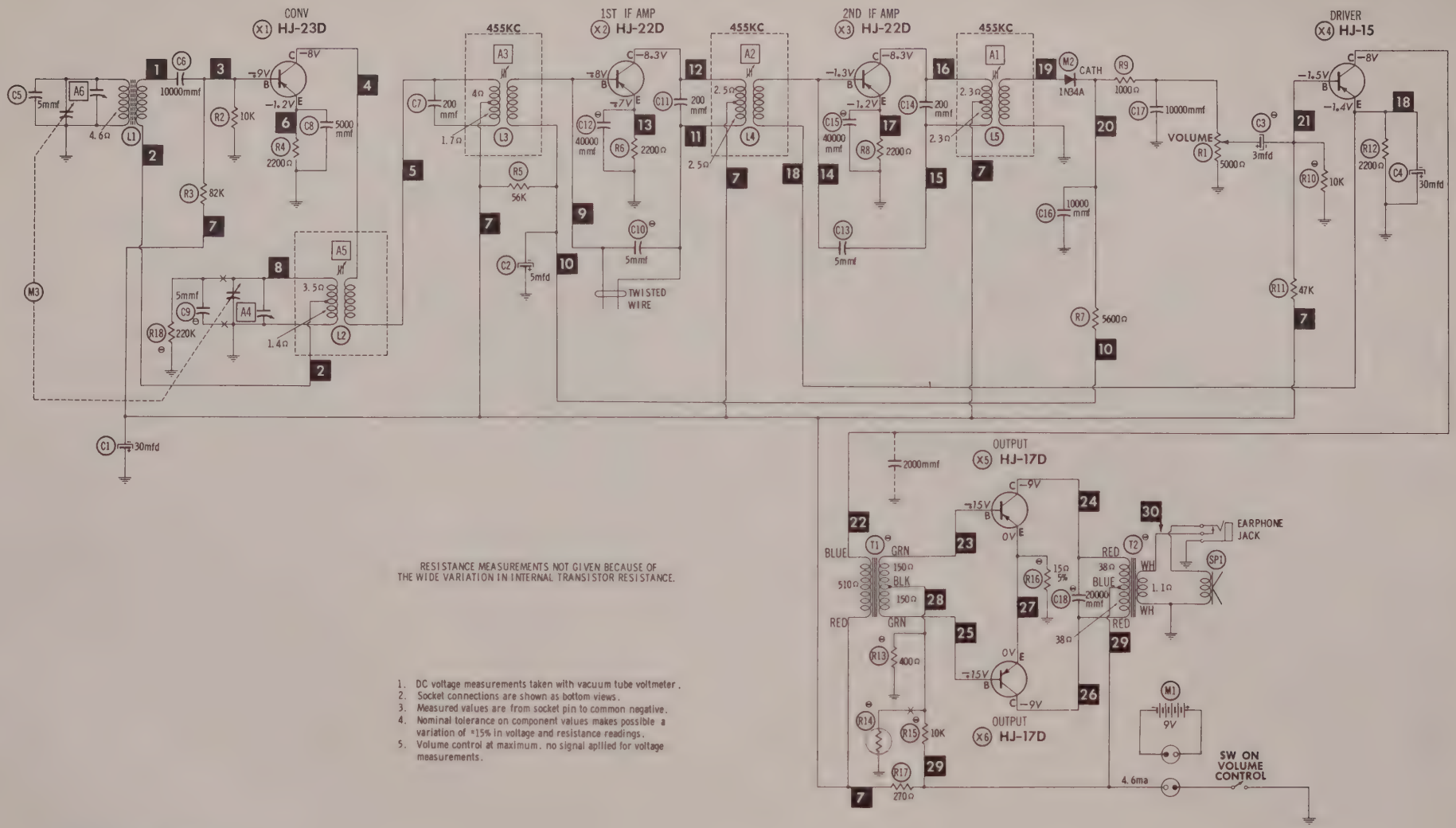
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2 A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1600KC	1600KC	"	A4	Adjust for maximum output.
3.		"	600KC	600KC	"	A5	Adjust for maximum output while rocking tuning gang. Repeat Steps 2 & 3.
4.		"	1400KC	Tune for 1400KC signal	"	A6	"

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H829

SET 433 FOLDER 10



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

© Howard W. Sams & Co., Inc. 1959

HITACHI MODEL TH-621

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	HJ-23D	Converter		2N140	2N485	2N140	PNP
X2	HJ-22D	1st IF Amplifier		2N139	2N483	2N139	PNP
X3	HJ-22D	2nd IF Amplifier		2N139	2N482	2N139	PNP
X4	HJ-15	Driver		2N104	2N362	2N109	PNP
X5	HJ-17D	Output		2N109	2N632	2N109	PNP
X6	HJ-17D	Output		2N109	2N632	2N109	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	HITACHI PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	30	10	54508	XPP-10030	NL30-15	TT15X30	ML30-15		TE-1158
C2	5	3	54509	XPP-3005	NL5-6	TT6X5	ML5-6		TE-1052, 2
C3	3	6	①	XPP-6003	NL3-6	TT6X2	ML2-6		TE-1082
C4	30	6	54510	XPP-6030	NL30-6	TT6X30	ML30-6		TE-1092

① Some versions may use 30mfd (Part #54510).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	HITACHI PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	5		53502	SI5	D6-050	LT6V5		5GA-V5	
C6	10000		54000	BPD-01	DD-103	BYA10S1	F-110	5HK-S1	
C7	200		53503	SI200	D6-201	LT6T2	UC-532	5GA-T2	
C8	5000		18	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C9	5		53502	SI5	D6-050	LT6V5		5GA-V5	
C10	5		53502	SI5	D6-050	LT6V5		5GA-V5	①
C11	200		53503	SI200	D6-201	LT6T2	UC-532	5GA-T2	
C12	40000		54002						②
C13	5		53502	SI5	D6-050	LT6V5		5GA-V5	
C14	200		53503	SI200	D6-201	LT6T2	UC-532	5GA-T2	
C15	40000		54002						②
C16	10000		54000	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C17	10000		54000	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C18	20000								③

① Some versions may use 10mmf (Part #53504).
② Some versions may use 50000mmf (Part #54001).
③ Some versions may use 40000mmf (Part #54002).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	HITACHI PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	5000Ω	½	52913					Volume - Switch

RESISTORS

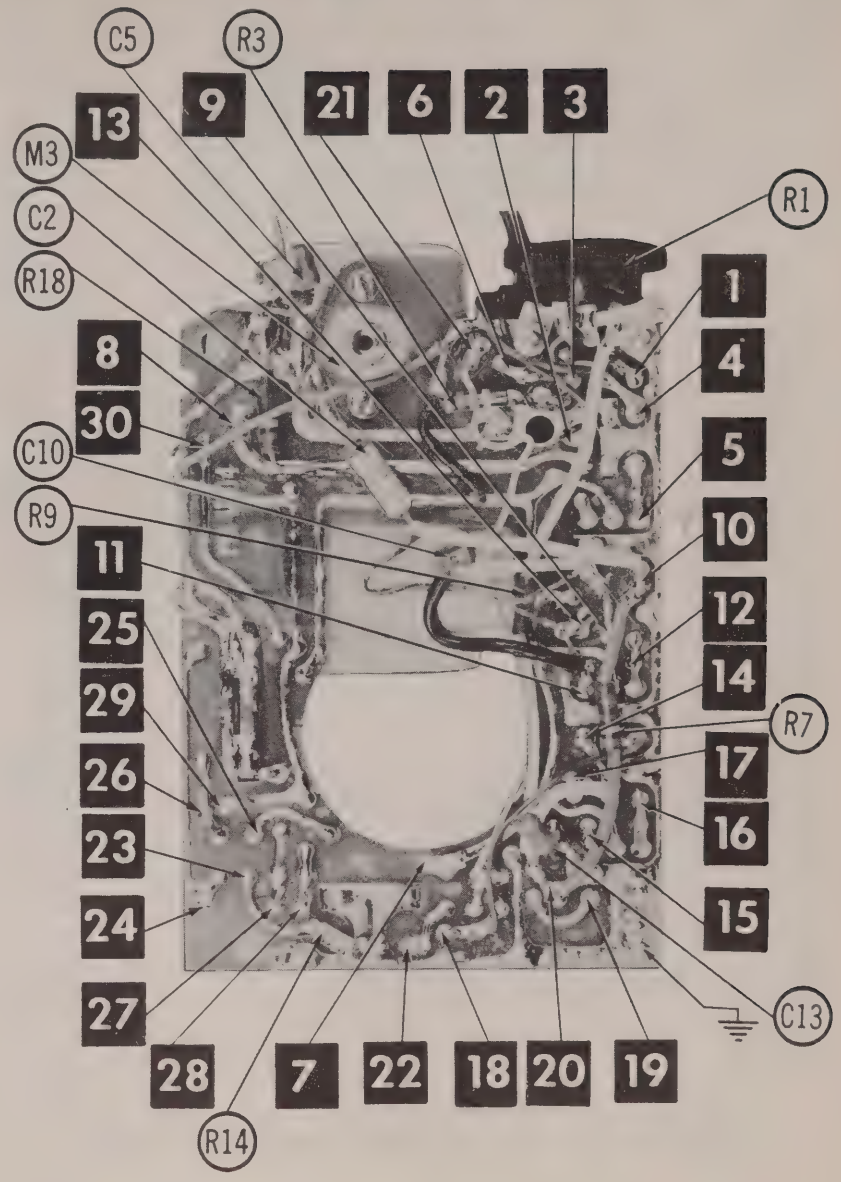
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		HITACHI PART No.	NOTES
	OHMS	WATT		
R2	10K		52509	
R3	82K		52510	
R4	2200Ω		52511	
R5	56K		52512	
R6	2200Ω		52513	
R7	5600Ω		52514	
R8	2200Ω		52511	
R9	1000Ω		52516	
R10	10K		52509	Note 1
R11	47K		52518	
R12	2200Ω		52511	
R13	400Ω			Note 2
R14	Thermistor			Note 3
R15	10K		52511	Note 4
R16	15Ω 5%			Note 5
R17	270Ω		52522	
R18	220K			Note 3

Note 1. Some versions may use 5600Ω (Part #52517).
Note 2. Some versions may use 470Ω (Part #52519).
Note 3. Not used in some versions.
Note 4. Some versions may use 18K (Part #52520).
Note 5. Some versions may use 50Ω (Part #52522).

PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		HITACHI PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	55044					
L2	Osc. Coil	55045					
L3	1st IF Trans.	55042					
L4	2nd IF Trans.	55043					
L5	3rd IF Trans.	55041					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	HITACHI PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.4	: 1	LT-421 ①						① Alternate Part #55040

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	HITACHI PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	2500Ω CT	11Ω	LT-420B ①							① Alternate Part #55046

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	HITACHI PART No.	QUAM PART No.	
SP1	2½"	PM	11Ω			

BATTERIES

ITEM No.	VOLTAGE	HITACHI PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	BL-006P		2U6		216		TR-146R	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		HITACHI PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N34A	56804	1N34A	1N38A	Detector (Pigtail)

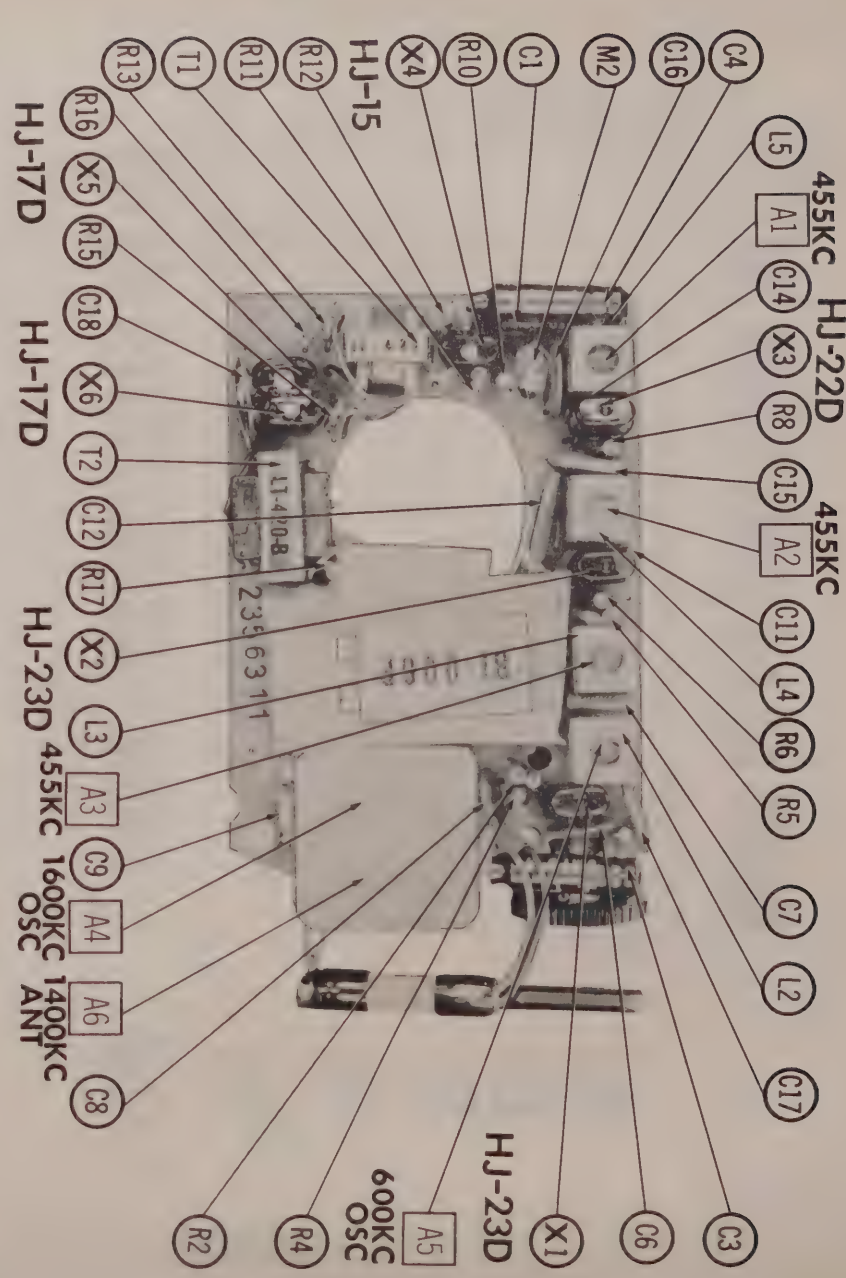
MISCELLANEOUS

ITEM No.	PART NAME	HITACHI PART No.	NOTES
M3	Tuning Cap Printed Board	54208 PD-1004	2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW

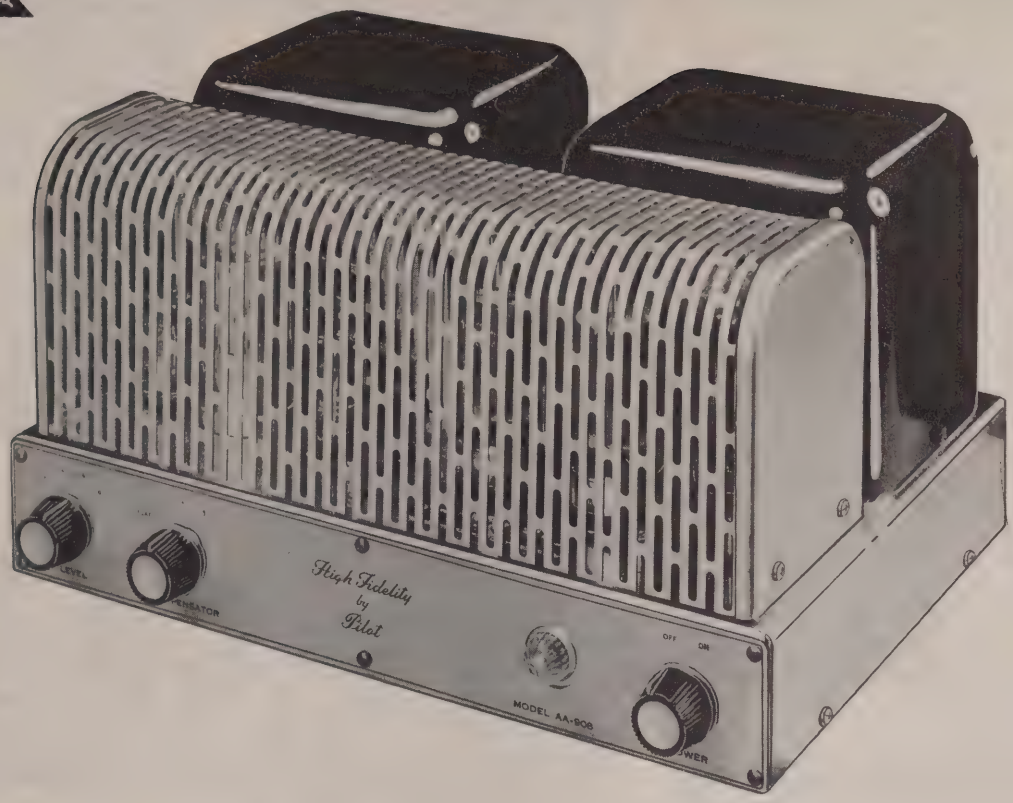


PHOTOFACT* Folder

EIA MEMBER

PILOT
MODEL AA-908

PILOT
MODEL AA-908



PILOT
MODEL AA-908

TRADE NAME	Pilot Model AA-908
MANUFACTURER	Pilot Radio Corp., 37-06 36th St., Long Island City 1, N. Y.
TYPE SET	AC Operated Audio Amplifier
TUBES	Five
POWER SUPPLY	105 - 120 Volts AC, 60 Cycles RATING 120 Watts, 1.17 Amp @ 117 Volts AC

ADJUSTMENTS

The following adjustments (in order) should be made if a tube is replaced.

Bias Adjust (R3)
1. Short K1 and K2 terminals with a short wire.
2. Connect a DC voltmeter between K1 and G terminals.
3. Adjust Bias control (R3) for a meter reading of 1.1V.

AC Balance (R2)
1. Short K1 and K2 terminals with a short wire.
2. Connect a VTVM between AC BAL and G terminals.
3. Inject a 1KC (or 60~ sine wave) signal into the amplifier.
4. Adjust AC Balance control (R2) for minimum deflection.

DC Balance (R1)
1. Connect a VTVM between K1 and K2 terminals.
2. Adjust DC Balance control (R1) for a meter reading of zero volts.
3. Recheck Bias adjust (R3).

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	AF Amp. -AC Balance Det.	12AX7
V2	AF Amp-Phase Inv.	12AX7
V3	Output	6CA7/ EL34
V4	Output	6CA7/ EL34
V5	Rectifier	5U4GA

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PILOT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	40	250	24-40	PRS250V40	BR4025	TC58	TD-40-250	MT-2540	TVA-1511
C2A	▲40	350	24-158	AFH2-40-80	B0326	FP227.5	TMD-58	D-176	TVL-2634
B	▲80	350							
C3	80	250	24-118	PRS450V80	BR8035	TC80	TD-80-350	MT-4580	TVA-1716
C4	10	100	24-143	PRS150V10	BBR10-150	TC52	TD-10-150	MT-1510	TVA-1406
C5	10	100	24-143	PRS150V10	BBR10-150	TC52	TD-10-150	MT-1510	TVA-1406
C6A	▲40	475	24-159	AFH2-66	B0487	FP260	TMD-92	T-197	TVL-2827
B	▲10	475							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	PILOT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C7	3000			BPD-003	DD-302	BYA10D3	UC-523	5GA-D3	
C8	.01	400		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C9	.022	400						5BF-S22	10%
C10	.022	400						5BF-S22	10%
C11	390			DI-00039	DD-391	L10T39	UC-5339	5GA-T39	
C12	.047	600		P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C13	.047	600		P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C14	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C15	.1	600		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C16	.1	600		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C17	33			DI-000033	DD-330	L10Q33	UC-5433	5GA-Q33	
C18	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PILOT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	39-43	AB-69	B47-1meg-S	Q11-137	TA16L	DC Balance
B	Shaft			AK-1	Not Req.	RQ	Not Req.	
R2A	100K	½	39-52	AB-40	B47-100K-S	B11-128	PTA15L	AC Balance
B	Shaft			AK-1	Not Req.	SK2	Not Req.	
R3A	5000Ω	½	39-42	AB-10	B47-5000S	Q11-114	TA53L	Bias Adjust
B	Shaft			AK-1	Not Req.	RQ	Not Req.	

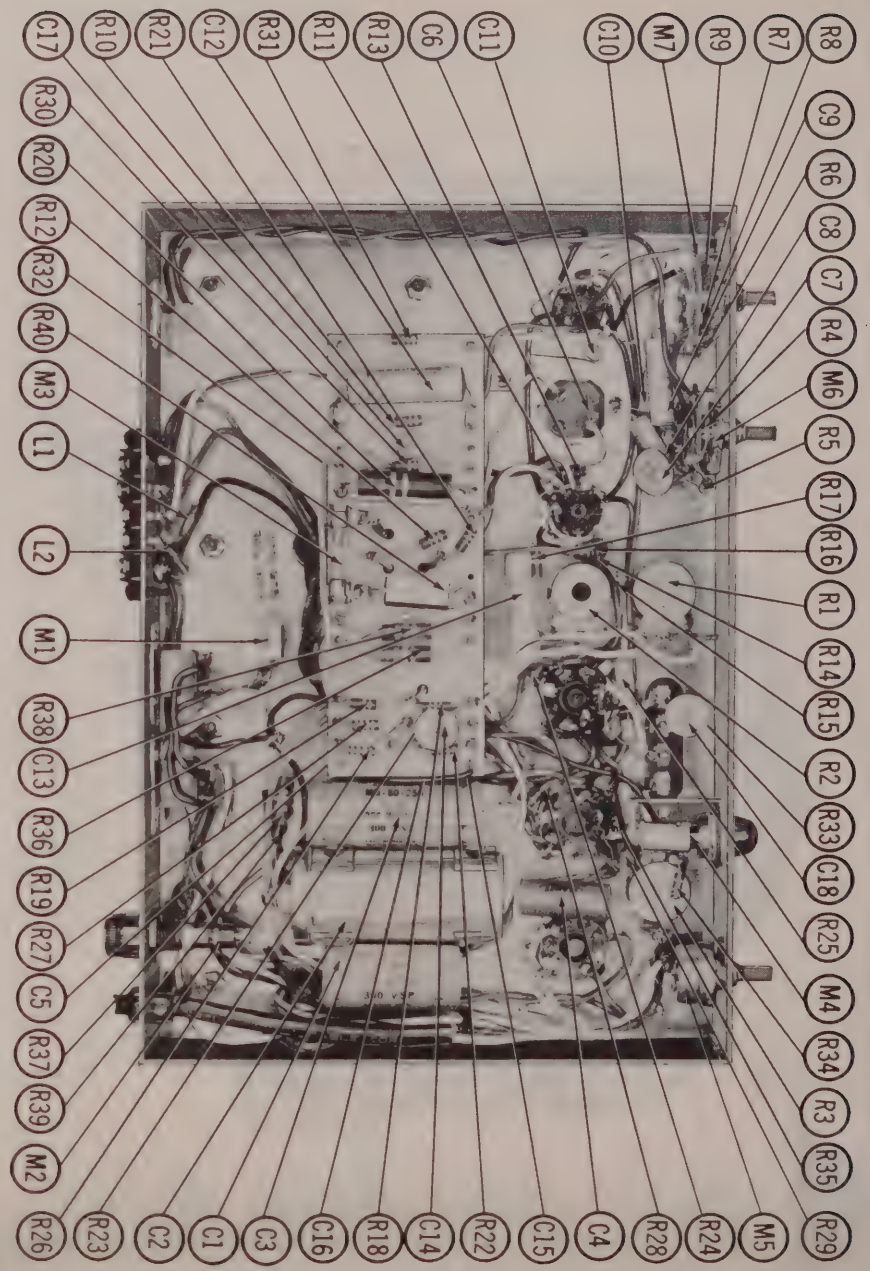
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		PILOT PART No.	NOTES
	OHMS	WATT		
R4	100K			
R5	82K			
R6	220K			
R7	100K			
R8	47K			

ITEM No.	RATING		PILOT PART No.	NOTES
	OHMS	WATT		
R9	47K			
R10	68K			
R11	1meg			
R12	68K			
R13	680Ω			

CHASSIS-BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	PILOT PART No.	NOTES
R14	1meg			
R15	220K			
R16	680Ω			
R17	220K			
R18	18K			
R19	220K			
R20	22K	2		
R21	68K			
R22	470K			
R23	330K			
R24	1000Ω			
R25	20Ω 5%		31-155	Note 1
R26	470K			
R27	330K			

Note 1. R25 and R29 are matched to 1%

ITEM No.	RATING OHMS	RATING WATT	PILOT PART No.	NOTES
R28	1000Ω			
R29	20Ω 5%		31-155	Note 1
R30	100K			
R31	680Ω			
R32	22K		31-166	
R33	220K			
R34	6800Ω			Note 2
R35	27K			
R36	180K	1		
R37	270K	1		
R38	180K	1		
R39	270K	1		
R40	100Ω	10	31-160	

Note 2. Some versions use 5600Ω in this application.

COILS

ITEM No.	USE	REPLACEMENT DATA PILOT PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Speaker Choke	31-167	19-1000	BC-561	4602		.92 Microhenry
L2	Speaker Choke	31-168	19-1000	BC-561	4602		1.1 Microhenries

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA PILOT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1.17A	820 VCT @ .110A	100 VCT @ .002A	55-61						
	SEC. 3	SEC. 4	SEC. 5							
	6.3 VCT @ 3.6A	5V @ 2.8A								

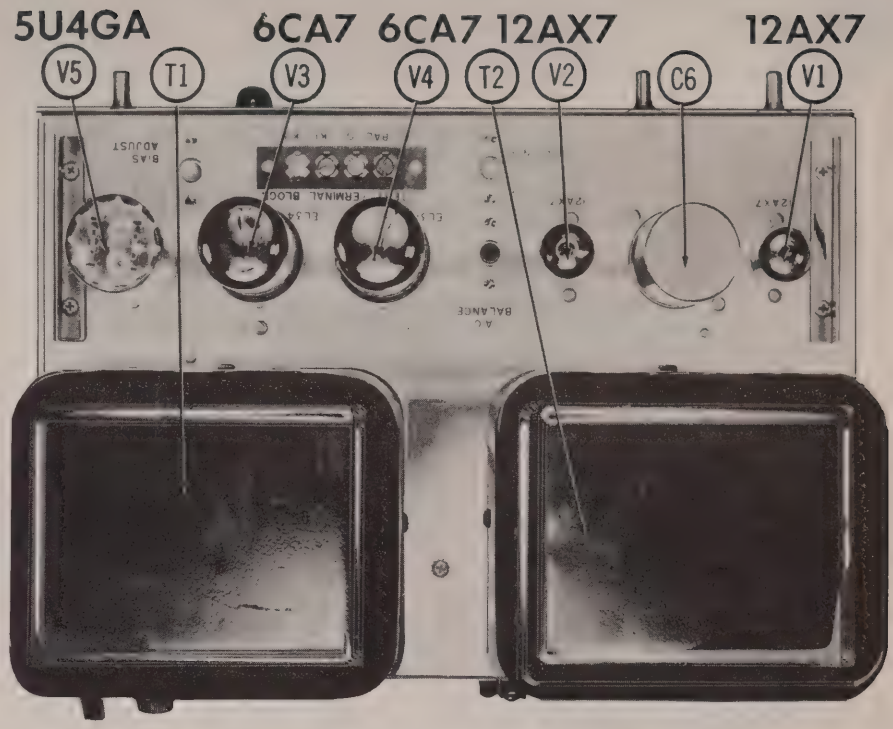
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA PILOT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5000Ω CT Screen Taps @ 1300Ω CT	16Ω Tap @ 8Ω	56-54					22S39		

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA PILOT PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.0018A	110-502	1159 ①	D-5410 ①	10 ①	① 2 Used

CHASSIS-TOP VIEW



FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA PILOT PART No. FUSE	PILOT HOLDER	LITTELFUSE FUSE	LITTELFUSE HOLDER	BUSS FUSE	BUSS HOLDER
M2	3AG	2½A 125V S/B	111-12		31302.5 (2½A 125V S/B)	342001	MDL2½	HKP
M3	3AG	1/4A 250V S/B	111-13		313.250 (1/4A 125V S/B)	121004 (2 Used)	MDL1/4	4051 (2 Used)

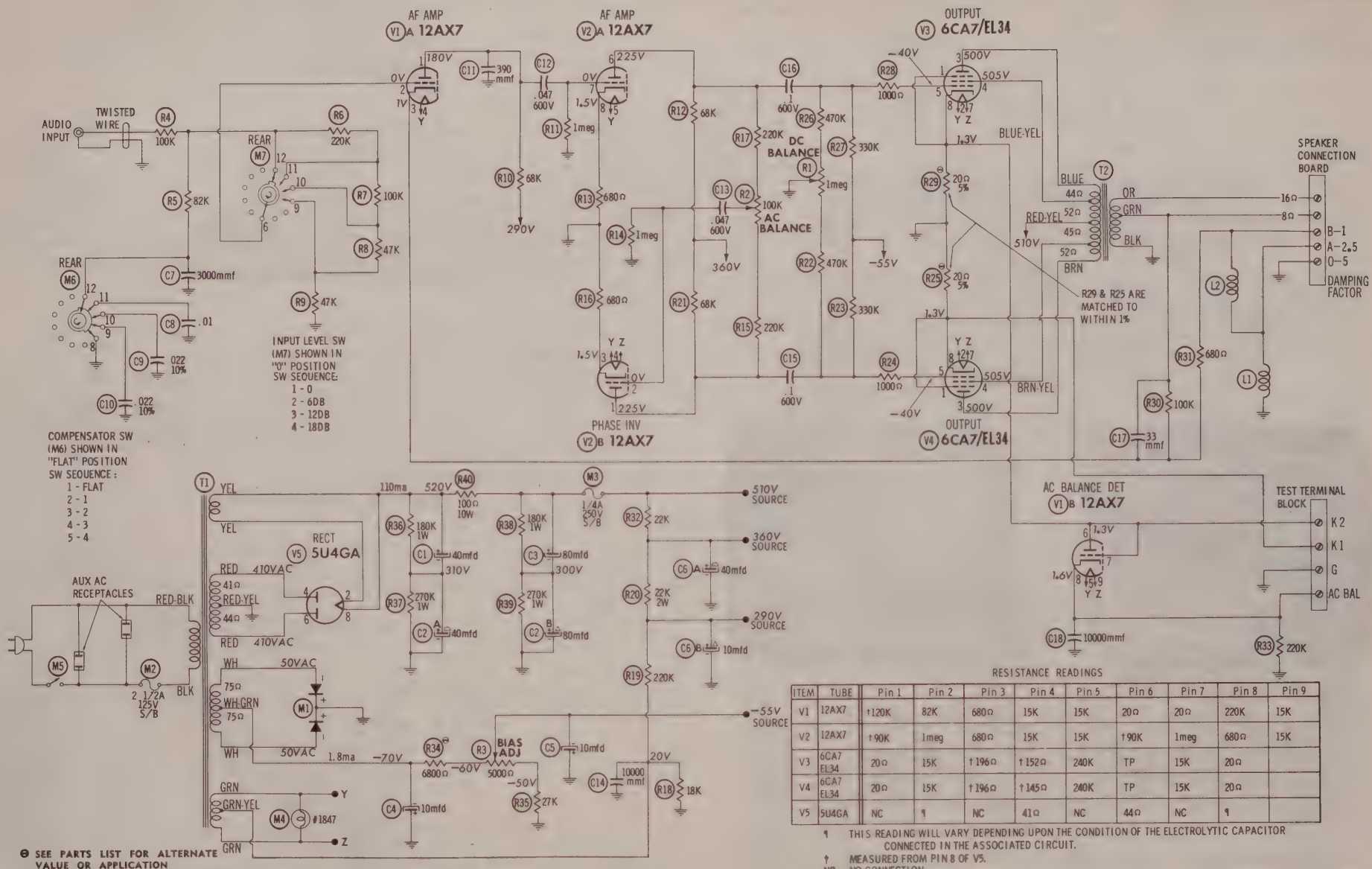
MISCELLANEOUS

ITEM No.	PART NAME	PILOT PART No.	NOTES
M4	Lamp	68-10	#1847
M5	Switch	100-125	Power On-Off (Rotary, Snap Type)
M6	Switch	100-121	Compensator (Rotary, Wafer Type)
M7	Switch	100-122	Input Level Attenuator (Rotary, Wafer Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†120K	82K	680Ω	15K	15K	20Ω	20Ω	220K	15K
V2	12AX7	†90K	1meg	680Ω	15K	15K	†90K	1meg	680Ω	15K
V3	6CA7 EL34	20Ω	15K	†196Ω	†152Ω	240K	TP	15K	20Ω	
V4	6CA7 EL34	20Ω	15K	†196Ω	†145Ω	240K	TP	15K	20Ω	
V5	5U4GA	NC	¶	NC	41Ω	NC	44Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM PIN 8 OF V5.
NC NO CONNECTION.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1959

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

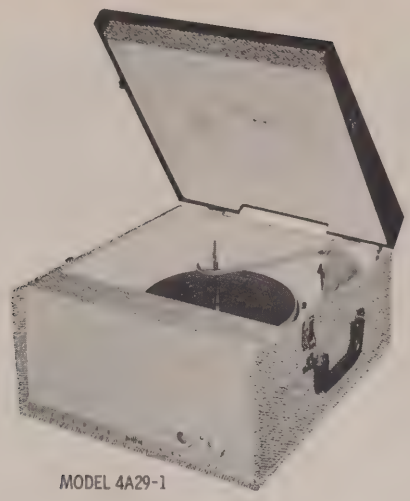
PILOT
MODEL AA-908

PHOTOFACT* Folder

EIA

STEELMAN
MODELS 4A29, 4A29-1

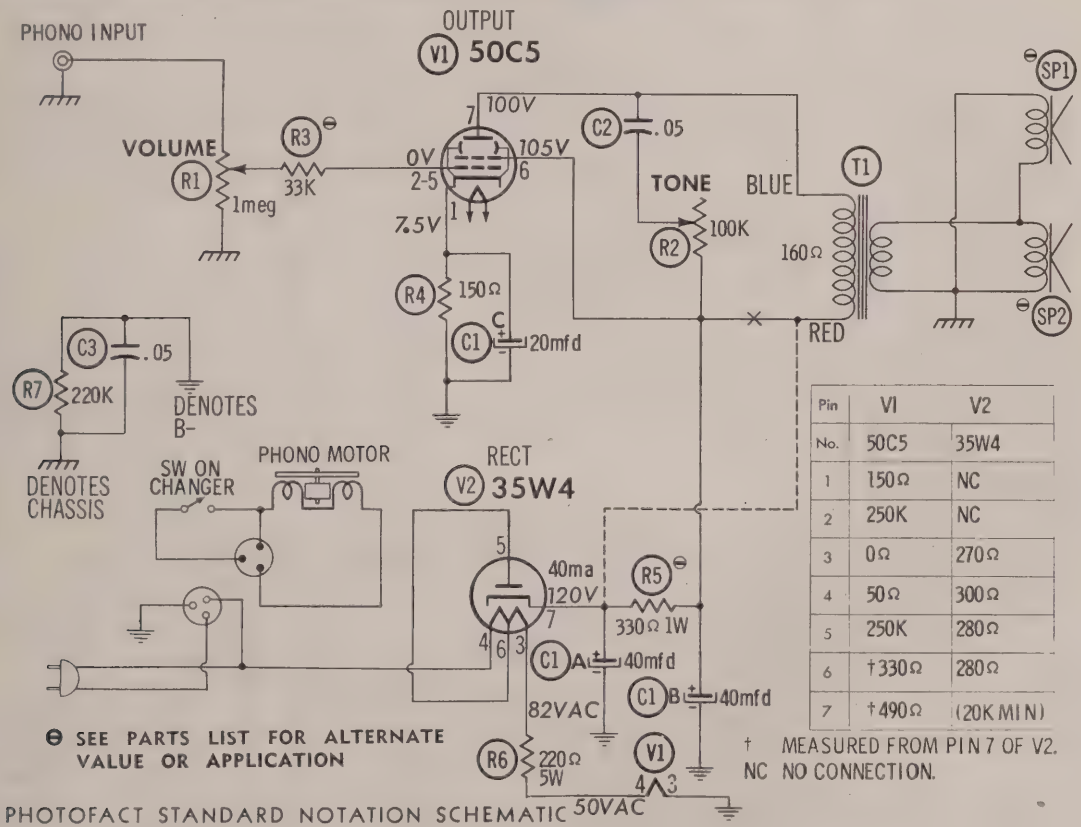
STEELMAN
MODELS 4A29, 4A29-1



MODEL 4A29-1

TRADE NAME	Steelman Models 4A29, 4A29-1
MANUFACTURER	Steelman Phono & Radio Co., Inc., 2-30 Anderson Ave., Mount Vernon, N. Y.
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES	Two
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 23 Watts, .25 Amp@117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE V-M 959 - PHOTOFACT SET 396 FOLDER 13.



Pin No.	V1	V2
1	150Ω	NC
2	250K	NC
3	0Ω	270Ω
4	50Ω	300Ω
5	250K	280Ω
6	†330Ω	280Ω
7	†490Ω	(20K MIN)

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

† MEASURED FROM PIN 7 OF V2.
NC NO CONNECTION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

Howard W. Sams & Co., Inc. 1959

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H783

SET 433 FOLDER 12

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Output	50C5	

ITEM No.	USE	TYPE	NOTES
V2	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150	583020	PRS150V404020	BBRT44215	TCT3116	TDLT-4	FMT-1540	R1110 *
B	40	150							
C	20	150							

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	STEELMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.05	200		P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C3	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	360280	B-70	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	100K	½	360250	B-41	A47-100K-Z	Q13-128	U39	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		STEELMAN PART No.	NOTES
	OHMS	WATT		
R3	33K			Note 1
R4	150Ω			
R5	330Ω	1		Note 2

Note 1. Some versions may use 27K in this application.

ITEM No.	RATING		STEELMAN PART No.	NOTES
	OHMS	WATT		
R6	220Ω	5		
R7	220K			

Note 2. Some versions may use 2200Ω in this application.

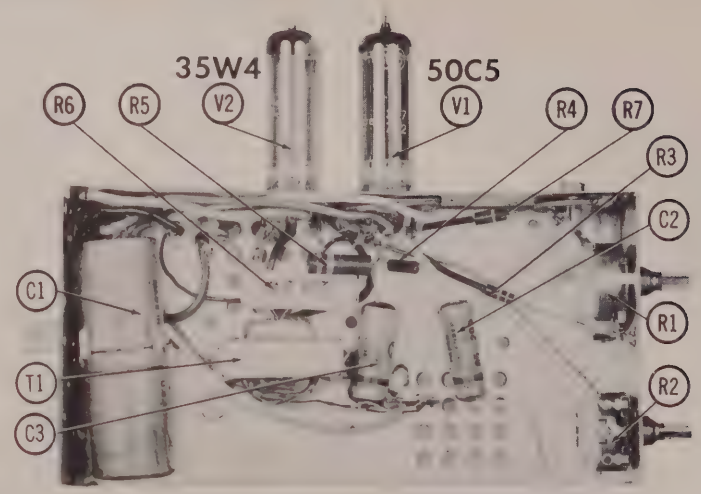
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2500Ω CT	1-2Ω	430241	Z1001 ①	A-2902①	AU-604①	A-3849①	24S64 ①		① Drill new mounting hole

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	STEELMAN PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	404003 ①	4A07	① Used in model 4A29-1. Parallel And Phase
SP2	4"	PM	3-4Ω	404003 ①	4A07	
	5"	PM	3-4Ω	405005 ②	5A15	② Used in model 4A29. Parallel And Phase
	5"	PM	3-4Ω	405005 ②	5A15	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	STEELMAN PART No.	ASTATIC PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	321511	120TS	N8-1 and N8-3			

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	STEELMAN PART No.	JENSEN PART No.	WALCO PART No.	
M2	329308 (78)	† CRA-55 or ♦ CRA-55D	† W-64S or ♦ W-64D	† Jewel ♦ Diamond
	329108 (LP)	† CRA-55LP or ♦ CRA-55LPD	† W-64MGS or ♦ W-64MGD	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	271303	Loudness, Tone, Model 4A29-1
Knob	271305	Loudness, Tone, Model 4A29

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401

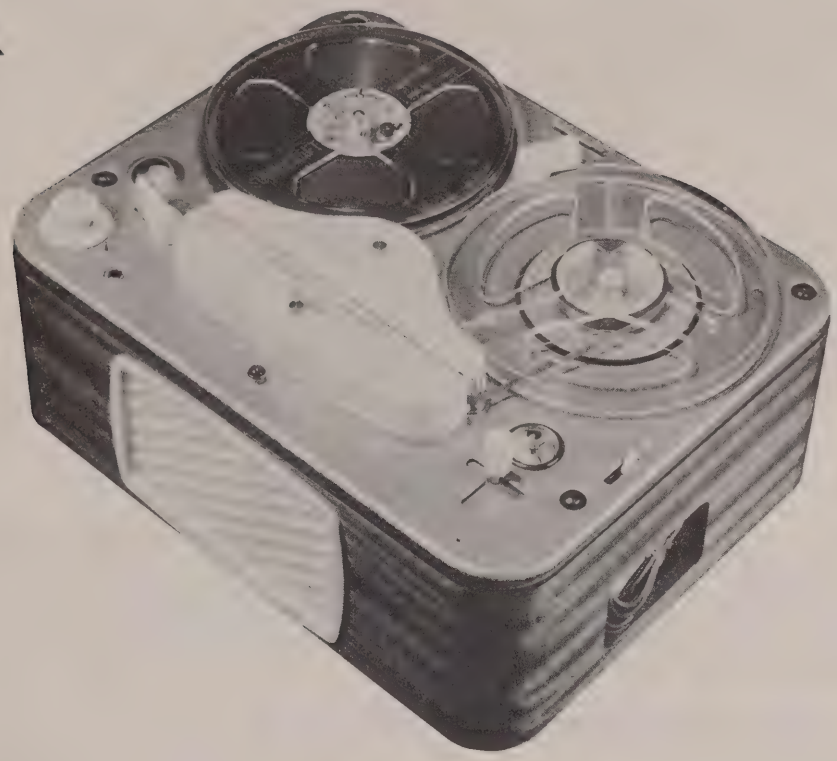
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

TANDBERG
MODELS 2, 2F, 3, 3B

TANDBERG
MODELS 2, 2F, 3, 3B



TANDBERG
MODELS 2, 2F, 3, 3B

GENERAL INFORMATION

Tandberg Models 2, 2F, 3, and 3B tape recorders play back and record on two tracks. The major difference between the models is their tape speeds. Models 3 and 3B have three tape speeds, 7 1/2, 3 3/4, and 1 7/8 ips, while Models 2 and 2F have two speeds, 3 3/4 and 1 7/8.

These tape recorders have a three-position loudspeaker switch. In the left position, the built-in loudspeaker is shunted by the external speaker. In the middle position, only the external speaker is connected, and in the right position, only the built-in speaker is connected.

A pair of terminals for connecting the phonograph pickup are provided on the terminal strip at rear of unit. If a phonograph and the tape recorder are to be used alternately, the pickup must be connected to these terminals. In the right position of the loudspeaker switch, the phono pickup is connected to an audio amplifier.

MANUFACTURED BY:
TANDBERG RADIOFABRIKK A/S
OSLO, NORWAY

SUPPLIED BY:
TANDBERG OF AMERICA CORPORATION
10 EAST 52ND STREET
NEW YORK 22, N. Y.

This material compiled and published by

HOWARD W. SAMS & CO., INC., INDIANAPOLIS 6, INDIANA

C347

Copyright 1959 • All Rights Reserved

SPECIFICATIONS

Model 3B

Power Supply:

110, 125, 145, 200, 220, and 245 volts AC, 50 or 60 cps

Power Requirements:

50 watts

Tape Speeds and
Frequency Response:

1 7/8 ips, 30-4,000 cps
3 3/4 ips, 30-8,000 cps
7 1/2 ips, 30-16,000 cps

Speed Tolerance:

± 1% for all speeds

Heads:

.00025" record-playback gap, separate erase, dual track.

Recording Level Indicator:

Electronic-eye tube EM 71. At maximum recording level, the tuning eye just closes.

Output Impedance and Power Output:

The output is on the terminal strip marked "Output." Maximum power output is 3 watts, or 3.5 volts over 4 ohms. The output terminals may also be unloaded and fed directly into a high-impedance amplifier.

Loudspeaker

The tape recorder has a built-in monitoring loudspeaker, terminals for a separate loudspeaker or earphones, terminals for direct connection to a radio receiver for recording and playback, and a separate loudspeaker switch.

Public Address:

The tape recorder may be used as an amplifier only between microphone and loudspeaker.

Fast Forward and Rewind Time:

Two minutes in either direction for 1,200 ft. of tape.

Erase and Bias Frequency:

66 2/3 kc

Tubes:

EF 804, ECC83, EL 84, EM 71, and selenium rectifier.

Model 2

Power Supply:

100-120 volts AC, 60 cps; 100-120 volts AC, 50 cps; 200-240 volts AC, 50 cps.

Power Requirements:

55 watts

Tape Speeds and
Frequency Response:

1 7/8 ips, 30-4,000 cps
3 3/4 ips, 30-8,000 cps

Recording Level Indicator:

Electronic-eye tube EM 71. At maximum recording level, the tuning eye just closes.

Loudspeaker:

The tape recorder has a built-in monitoring loudspeaker, terminals for separate loudspeaker or earphones, a terminal for direct connection to a radio receiver for recording and playback, and a separate loudspeaker switch.

Public Address:

The tape recorder may be used as an amplifier only between microphone and loudspeaker.

Fast Forward and Rewind Time:

3 minutes in either direction

Erase and Bias Frequency:

33.33 kc

Tubes:

EF 804, ECC 83, EL 84, EM 71, and selenium rectifier.

Model 3

This model has an additional tape speed of 7 1/2 ips., with the following data:

Frequency Response

At 7 1/2 ips., 30 to 16,000 cps.

Fast Forward and Rewind Time:

About 1 1/2 minutes in either direction

Erase and Bias Frequency:

66 2/3 kc
The data for the 1 7/8 and 3 3/4 ips. speeds are the same as those for the Model 2.

Model 2F

This model is the same as the Model 2, except it has relays for instant start, stop, and rewind by electrically operated remote control.

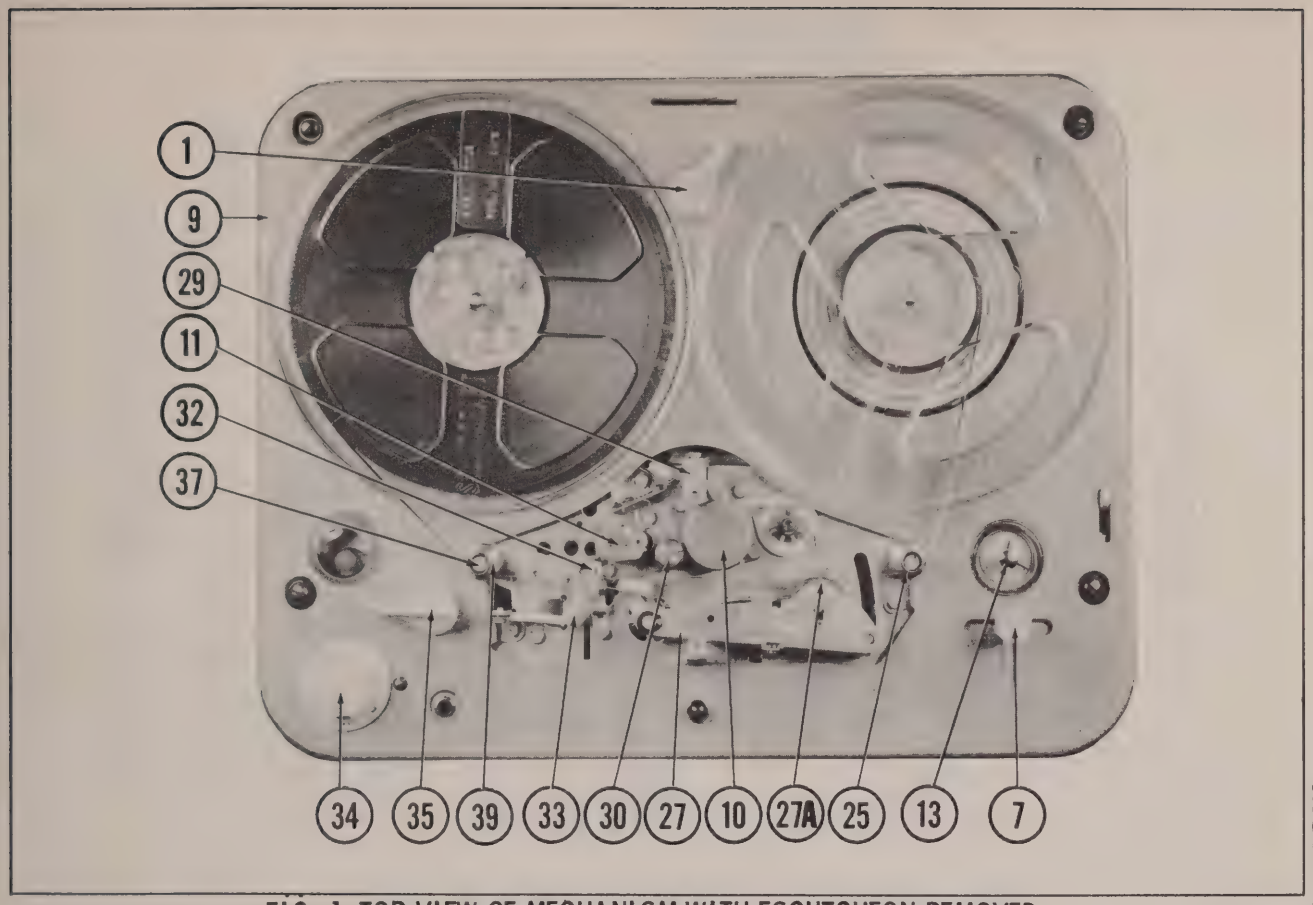


FIG. 1 TOP VIEW OF MECHANISM WITH ESCUTCHEON REMOVED

OPERATING INSTRUCTIONS

Threading the Tape

1. Place a full reel of tape on left turntable.
2. Place an empty reel on right turntable. Be sure both reels are fully seated on the turntables.
3. Unwind about 16 inches of tape. Hold a section of tape taut with both hands and insert into the tape slot. Feed the free end of the tape into the slot in the hub of the empty reel. Turn the reel counterclockwise until the tape is secured and all slack is taken up between reels.

Speed Change

To change speeds in the three-speed models, turn speed selector knob to the desired speed. In the two-speed models, speed selector knob is turned to the right and lifted for 3 3/4 ips or depressed for 1 7/8 ips. Speeds can be changed while recording.

To Record from Microphone

1. Plug the microphone into the jack in the left corner at the top of the recorder.
2. With Operating Lever knob in neutral, the Record-Playback-Public Address knob should be set to Record and held while the Operating Lever knob is placed in the down position.
3. Rotate the Volume control until the green portions of the electronic eye just meet, but do not overlap. Too much volume will cause distortion, while too little volume will cause hum or hiss in the recorded material.

NOTE: The electronic eye operates only during a recording, and the indicator may vary according to the sound intensity.

To Record from Radio

1. Connect a shielded lead from radio output to recorder Input jacks.
2. Remove microphone from recorder. For some receivers, the Loudspeaker switch may have to be turned to position 1 to prevent howl.
3. Tune radio to desired station and adjust volume control of radio to slightly above normal listening level. If control is set too low, hiss and hum will be present in the recording.
4. Proceed as described in steps 2 and 3 under "To Record from Microphone."

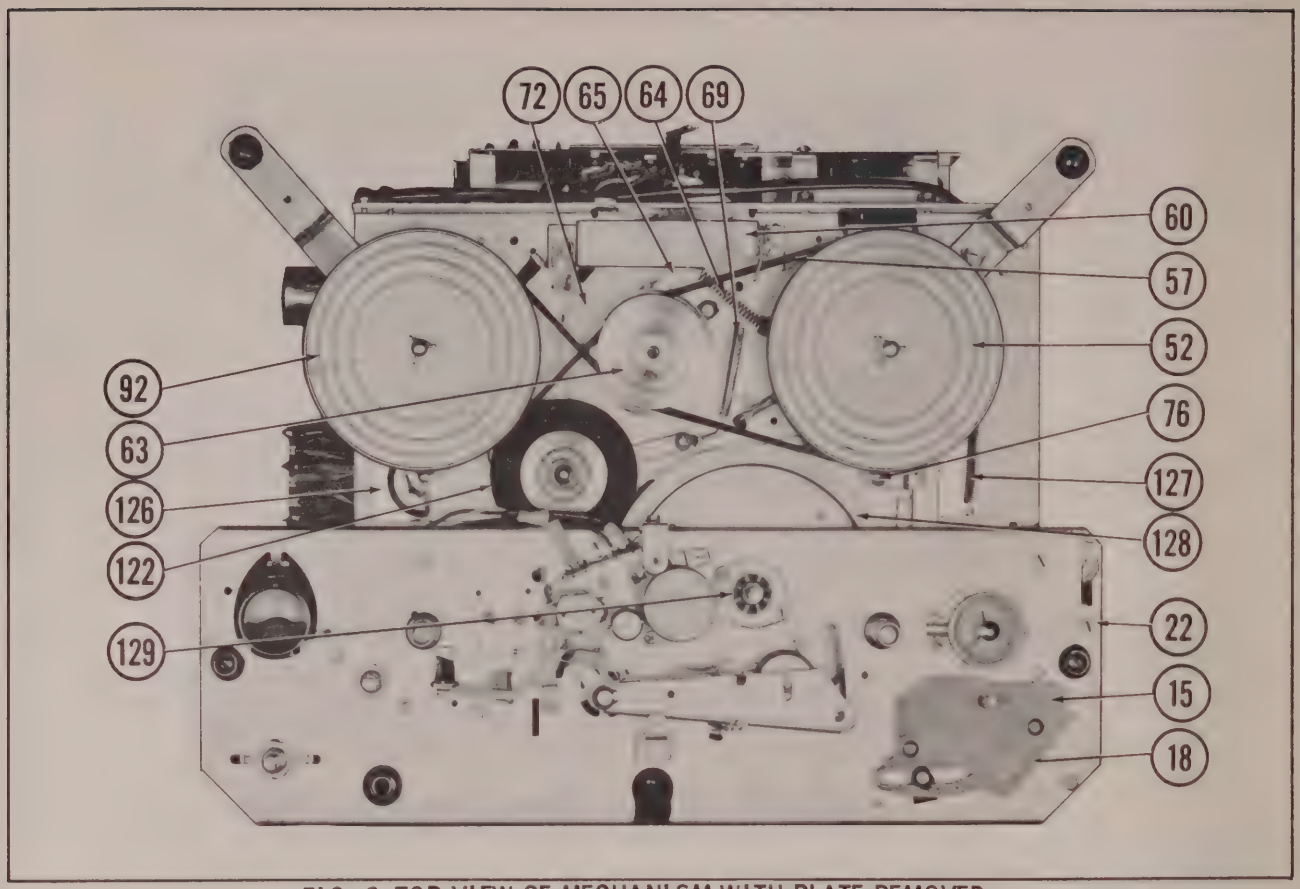


FIG. 2 TOP VIEW OF MECHANISM WITH PLATE REMOVED

To Record from Phonograph

1. Directly from Phonograph

   (a) Connect pickup to recorder Input jack.
   (b) Proceed as described in steps 2 and 3 under "To Record from Microphone."

2. Through Radio Receiver

   (a) Switch radio receiver to phonograph position. Connect shielded lead from radio output to recorder jacks.

   (b) Connect shielded lead from recorder Output jack to radio receiver phono input.

   (c) Connect pickup to terminals labeled Pick Up on recorder.

   (d) Set Loudspeaker switch to P. UP position.

   (e) Adjust radio volume control to slightly above normal listening level.

   (f) Proceed as described in steps 2 and 3 Under "To Record from Microphone."

Fast Forward and Rewind

1. For fast forward, move the Operating Lever knob all the way to the right.

2. For fast rewind, move the Operating Lever knob all the way to the left.

NOTE: Forward and rewind speeds can be slowed or stopped by moving the Operating Lever knob toward neutral.

Playback

1. If the tape recorder loudspeaker is to be used, set the loudspeaker switch to position 1.

2. Set Record-Playback-Public Address knob to Playback.

3. Pull Operating Lever knob down until it latches in place.

4. Adjust Volume control to desired listening level.

5. Playback stops when Operating Lever knob is returned to neutral.

NOTE: The electronic eye is disconnected during playback.

Loudspeaker Switch

The loudspeaker switch has the following positions:

1. Position 1--to the right, for playback through built-in speaker.

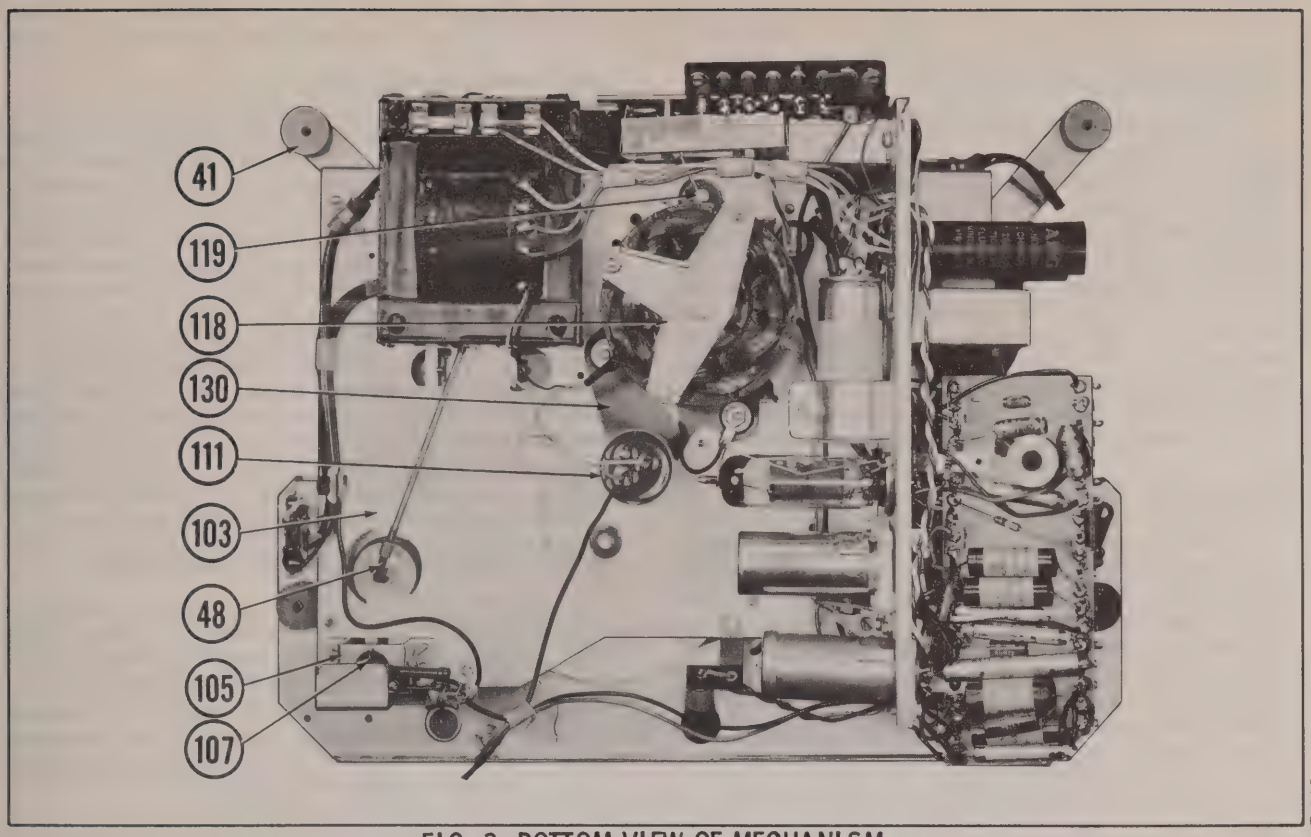


FIG. 3 BOTTOM VIEW OF MECHANISM

2. Position 2--in the middle, for playback through an external hi-fi speaker, earphones, or radio.

3. Position 1 & 2--to the left, for playback through both built-in and external speakers.

NOTE: Position P. UP (same as position 1) is used for playing phonograph records through a radio receiver, thus bypassing the tape recorder.

DISASSEMBLY INSTRUCTIONS

All servicing requires removal of the unit from its carrying case, with the following exceptions:

Cleaning and aligning record-playback head (10), pressure roller (27A), pressure roller arm assembly (27), and pressure pad and spring (33).

To remove tape transport mechanism and amplifier assembly from case, remove four top baseplate mounting screws (20) at the corners of the unit and their respective lockwashers (21). Carefully lift top baseplate (22) and partially remove unit from case. Disconnect speaker leads from speaker and remove unit from case.

CLEANING

The record head, capstan, and pressure roller may accumulate tape coating residue, worn off the tape as it passes these parts. Use a soft cloth and alcohol to clean the head surfaces, capstan, and pressure roller.

CAUTION: Do not use a brush to clean the recording head because it might mar the laminations.

LUBRICATION

All rotating parts have oilite bearings. If oil is needed, lubricate the top of the motor bearing with one drop of fine-grade light machine oil. Remove any surplus oil before running the unit. Speed transfer wheel (122) tire and motor pulley must be kept free from oil or grease; otherwise, the drive will slip.

Take-Up Pulley Disc

The Operating Lever knob must be placed in Fast Rewind. Upper clutch lever (76) is adjusted in this position. Trip bar (126) is so positioned that the steel ball on which upper clutch lever (76) rests is in its highest position. The other end of upper clutch lever (76) pushes down on the tags of take-up pulley disc (56) and lowers take-up pulley disc (56), together with lower clutch lever (75). In this position, there must be more than 1/64" clearance between felt ring (52A) and take-up pulley disc (56). This clearance can be adjusted by bending the clutch lever slightly. Always make sure that upper clutch lever (76) touches the two tags on take-up pulley disc (56) simultaneously.

Take-Up Turntable

With the Operating Lever knob in the normal forward drive position, take-up turntable (52) must be given enough friction torque by take-up pulley disc (56) to wind the tape during recording or playback. This friction torque should be from 10 to 14 grams, measured at the end of a spoke in the empty tape reel. See that the tags on take-up pulley disc (56) are midway between upper clutch lever (76) and lower clutch lever (75). Upper clutch lever (76) is positioned with its steel ball in the middle and releases the pressure from lower clutch lever (75) on the tags. The pulley disc is pressed against the felt ring on take-up turntable (52) with the compressive force of compression spring (58) only. The compressive force of the spring must be adjusted for 10 to 14 grams friction torque. Because the felt gradually wears, the clearance between the tag on take-up pulley disc (56) and upper clutch lever (76) should be approximately 1/64" to 3/64". To guard against unwanted upward pressure by lower clutch lever (75), there should be approximately 1/64" clearance underneath the tags.

Upper and Lower Clutch

With the Operating Lever knob in Fast Forward or neutral, the steel ball on which the clutch lever rests is in its lowest possible position, i.e., the other end of the lever is as high as possible. The spacing between upper clutch lever (76) and the catches on lower clutch lever (75) should be approximately 1/64". Lower clutch lever (75) exerts pressure on the tags of take-up pulley disc (56) and engages the clutch by means of lower clutch level (73). In Fast Forward, a high friction torque is necessary and is accomplished by means of compression spring (58) and lower clutch lever spring (73) underneath lower clutch lever (75). The friction torque should be approximately 3 oz., acting on an arm 3 5/32" long. The friction torque is supplied mainly by lower clutch lever (75), and the spring tension must be adjusted if the torque is too low.

Supply Pulley Disc and Supply Clutch Lever

1. With the Operating Lever knob in Fast Forward drive, the steel ball of supply clutch lever (99) is at its highest position on trip bar (126). Supply clutch lever (99) acts on the tags and disengages the clutch. Clearance between felt and supply pulley disc should be 1/64" to 3/64". Adjust clearance by bending supply clutch lever (99).

2. With Operating Lever knob in Fast Rewind or neutral, the steel ball is lowered as much as possible, and supply clutch lever (99) is raised to obtain clearance between the lever and the tags. Compression spring (98) has more tension than the corresponding one in the right-hand clutch assembly and supplies all the friction torque itself. The friction torque should be approximately 3 oz., acting on an arm 3 5/32" long.

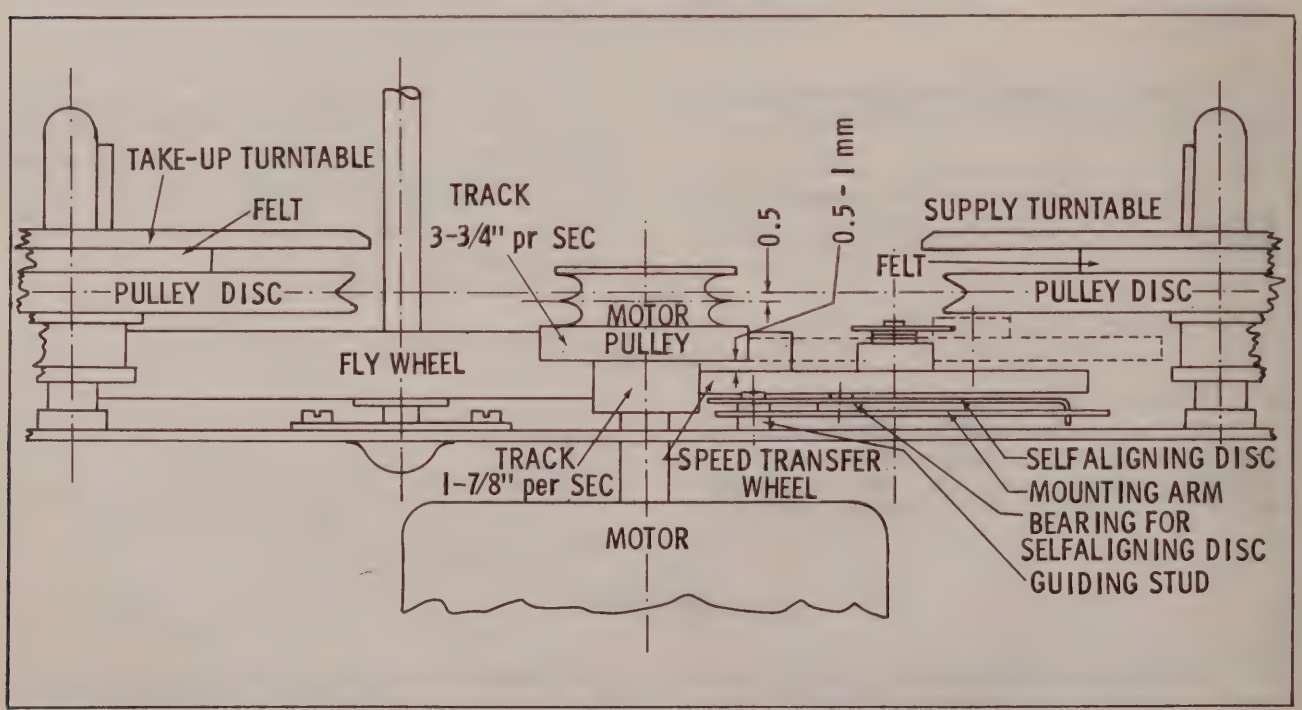


FIG. 4 DIAGRAM OF DRIVING MECHANISM

Motor Pulley and Speed Transfer Wheel

A side view of the driving mechanism is shown in **Figure 4.** Because of the belt drive, the motor pulley must be accurately adjusted for height while the Operating Lever knob is in neutral. The height of motor pulley (63) is correct when the dividing rib of the motor pulley is 0.5 mm, or 3/64", below an imaginary connecting line between the bottom of the V-shaped grooves in take-up pulley disc (56) and supply pulley disc (96).

Speed transfer wheel (122) has two or three height positions (depending on the model), one for each tape speed. The wheel is shown in the 1 7/8" position on the Exploded View. Spacing of 1/64" to 3/64" between speed transfer wheel (122) and motor pulley (63) is required; also make sure there is sufficient clearance between speed transfer wheel (122) and the guiding stud in the self-positioning disc underneath. The height of speed transfer wheel (122) is easily adjusted by placing some of the spacers from the upper to the lower end of the bearing, or vice versa. Make certain that speed transfer wheel (122) fully contacts flywheel (128) and track on motor pulley.

Tape Guides

One adjustable and two fixed guides provide a proper path for the tape. The tape must run at precisely the same height from the left to the right tape guide. The adjustable tape guide is so set that the tape runs an equal distance from its flanges.

Erase and Record-Playback Head

Position of the heads is correct when the edge of the tape runs 3/32" below the edge of the erase head and edge to edge with the record head. The slit of record-playback head (10) should be vertical. Two adjusting screws are found at the left of its housing. Before adjusting, a signal of 5,000 cps at 3 3/4 ips should be recorded. For the correct position, adjust for maximum output of the recorded 5,000-cps signal.

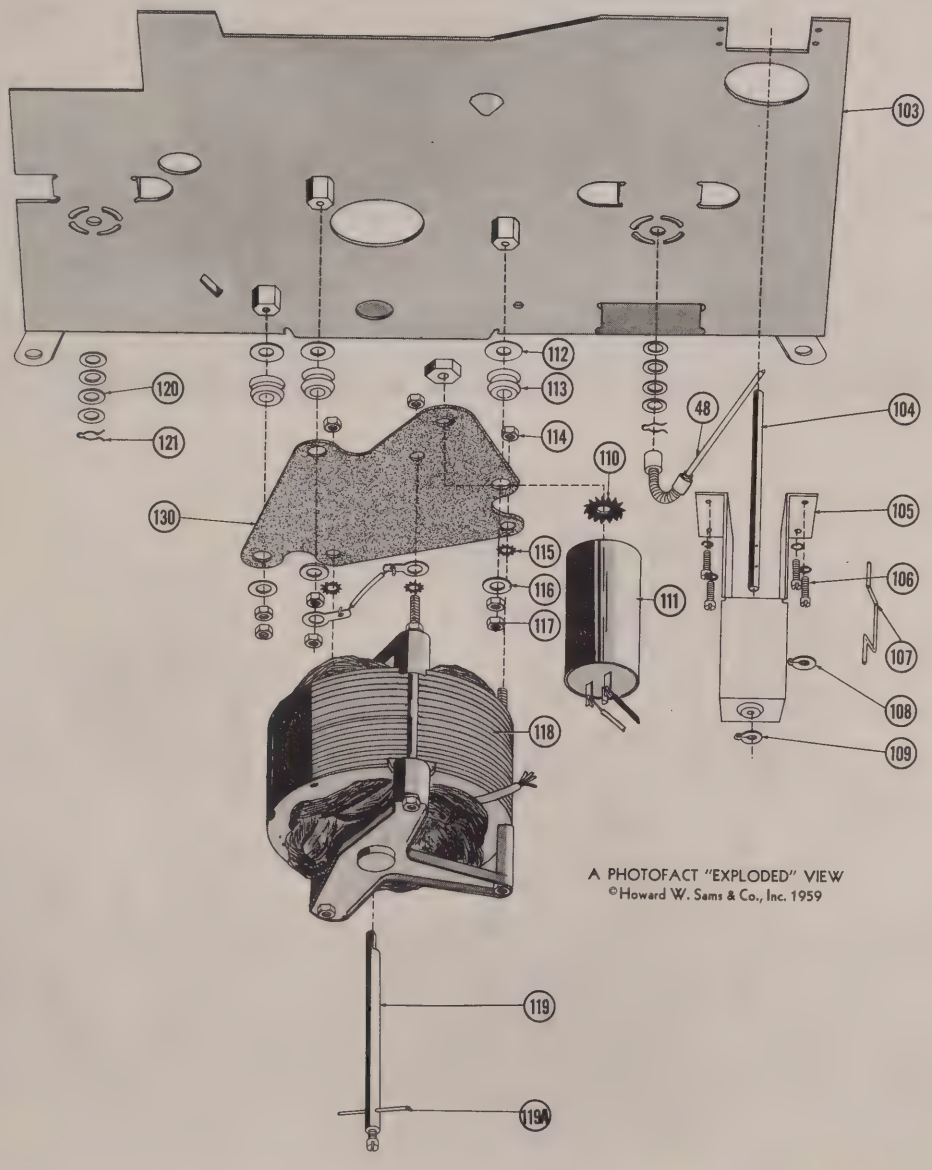
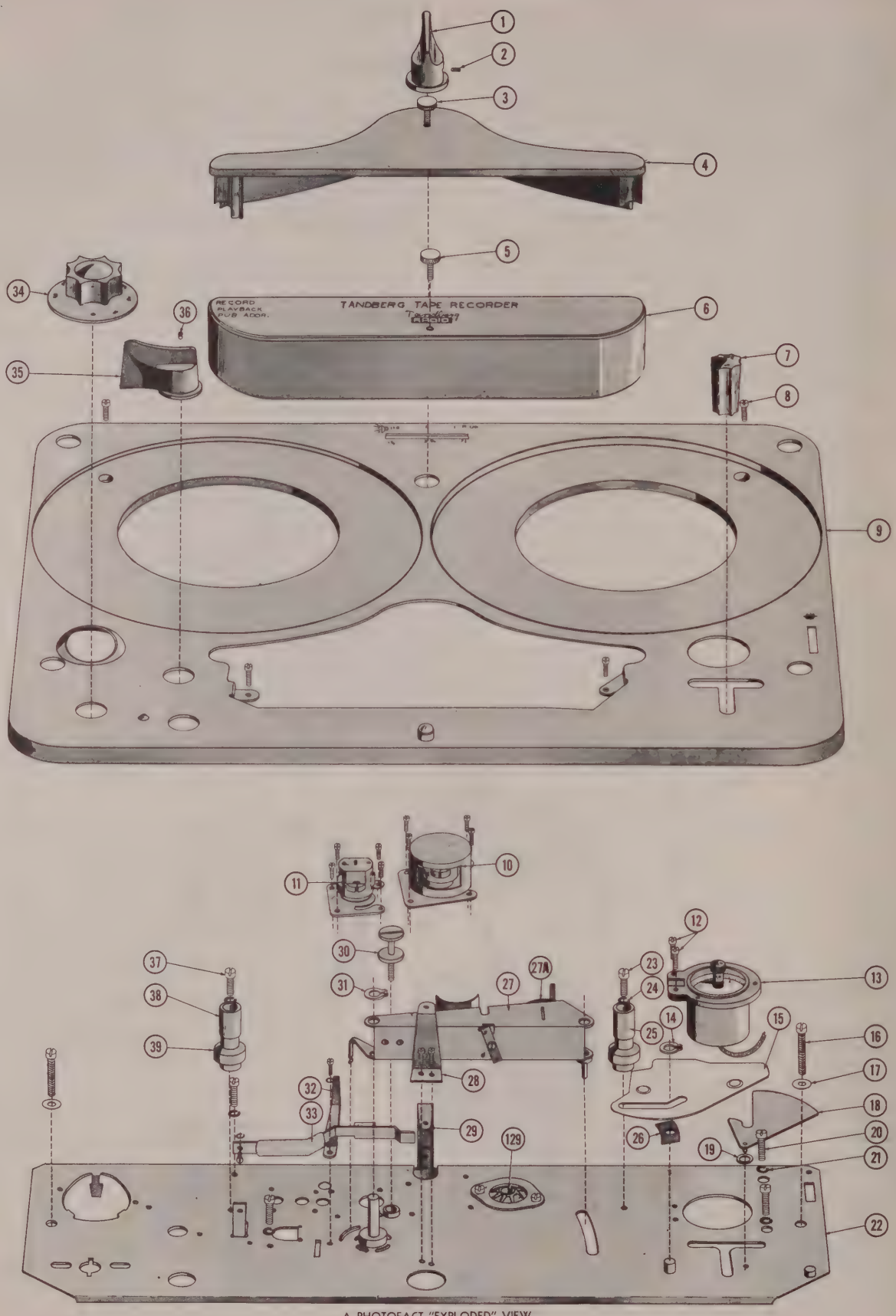


FIG. 5A EXPLODED VIEW OF PARTS BELOW BOTTOM PLATE



A PHOTOFACT "EXPLODED" VIEW
©Howard W. Sams & Co., Inc. 1959

FIG. 5B EXPLODED VIEW OF PARTS ABOVE TOP PLATE

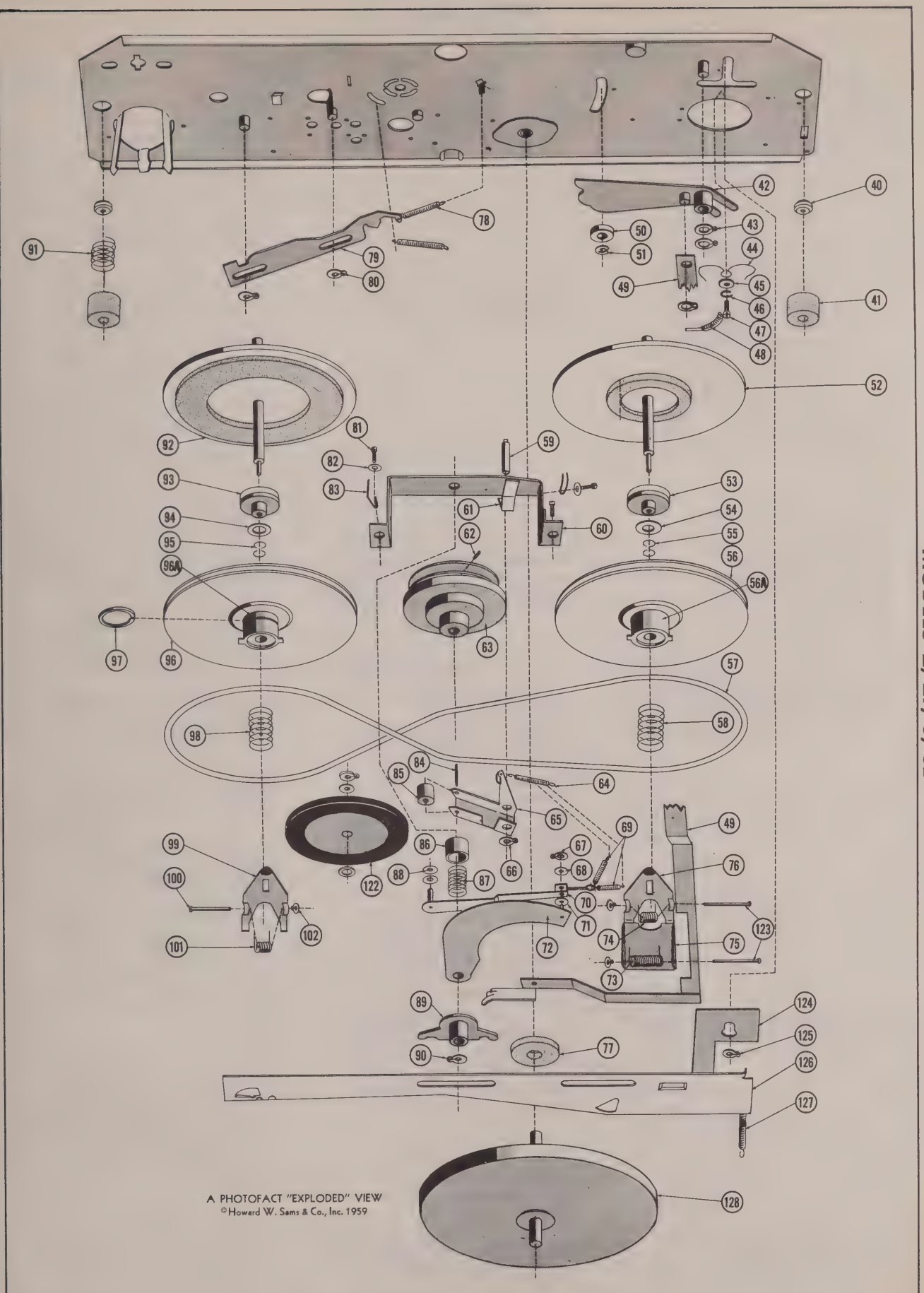


FIG. 5C EXPLODED VIEW OF PARTS BELOW TOP PLATE

Symptom	Cause	Remedy
Does not operate in any position of the Operating Lever knob.	1. Microswitch M15 does not make contact.	1. Microswitch M15 should break the motor current in the neutral position of the Operating Lever knob and make contact when the lever is halfway between any other position. If necessary, microswitch M15 can be adjusted.
	2. Drive belt (57) has jumped from its groove in motor pulley (63).	2. Remove steel top plate (9) and put the belt back in place. The belt runs from the lower groove on motor pulley (63) to take-up pulley disc (56) and then to the upper groove of motor pulley (63). The belt crossover is to the left of motor pulley (63). The height of motor pulley (63) should be checked.
	3. The motor locks and stalls.	3. Replace motor and adjust motor pulley (63).
Does not operate in normal forward drive.	1. Pressure roller (27A) on pressure roller arm assembly (27) is not in place.	1. Replace pressure roller (27A), using a new retaining ring. The retaining ring must not be stretched too far when put into place, and special pliers should be used.
Slow speed in 1 7/8 ips. position.	1. Not enough friction between speed transfer wheel (122) and motor pulley (63).	1. Check for proper clearance of speed transfer wheel mounting arm (72).
	2. Extension spring (69) for speed transfer wheel (122) does not exert enough force.	2. Shorten extension spring (69) until it pulls properly in the 3 3/4 ips. position.
	3. Speed transfer wheel (122) rubs underneath motor pulley (63).	3. See "Motor Pulley and Speed Transfer Wheel" under "Mechanical Adjustments."
	4. Incomplete disengagement of supply pulley disc (96), causing too much friction in supply turntable (92).	4. Adjust supply pulley disc (96). See "Supply Pulley Disc and Supply Clutch Lever" under "Mechanical Adjustments."
Takes unreasonably long time to reach full speed.	1. The motor has insufficient starting torque.	1. Replace motor.
	2. The take-up clutch friction is so high that it loads the motor.	2. Adjust take-up clutch friction. See "Take-up Turntable" and "Take-up Pulley Disc" under "Mechanical Adjustments."
	3. Take-up pulley disc (56) loads the motor too heavily because bearing friction is too high.	3. Replace take-up pulley disc (56).
Tape runs unevenly in Fast Forward.	1. Running friction is too high in supply turntable (92).	1. Supply pulley disc (96) must run free of the turntable. Put a drop of oil on the

Symptom	Cause	Remedy
		green felt on flange (93).
	2. Insufficient torque at take-up pulley disc (56).	2. (a) The felt ring underneath take-up turntable (52) is so thin that take-up pulley disc (56) does not press against the felt. Replace take-up turntable (52). (b) The tags on take-up pulley disc (56) rest on upper clutch lever (76). Adjust upper clutch lever (76). See "Take-up Pulley Disc" and "Take-up Turntable" under "Mechanical Adjustments." (c) Insufficient spring pressure on lower clutch lever (75). Stretch spring (58).
	3. One of the steel balls under the clutch levers is missing.	3. Solder steel ball to the lever.
Tape runs unevenly in Rewind	1. One of the steel balls under supply clutch lever (99) is missing.	1. Solder steel ball to the lever.
	2. Supply clutch lever (99) sticks.	2. Adjust the ears supporting supply clutch lever (99).
	3. Drive belt (57) jumps from its grooves onto the felt of supply turntable (92).	3. Put drive belt (57) back in place. Check motor pulley (63) take-up pulley disc (56), and supply pulley disc (96) for correct height.
	4. The tags on supply pulley disc (96) have slipped from their catches.	4. Assemble correctly.
Tape reels rub on top plate (9).	1. Take-up turntable (52) or supply turntable (92) out of position.	1. Check turntables for proper height.
Tape path not normal. Tape climbs.	1. The felt pad is pressed unevenly against erase head (11).	1. Twist pressure pad and spring (33) slightly so that approximately 3 oz. pressure is evenly exerted on the tape.
	2. Adjustable tape guide (30) is loose.	2. The split cylinder into which the tape guide is screwed must be tightened slightly.
	3. Pressure roller (27A) exerts uneven pressure on the capstan, part of flywheel (128).	3. Adjust the latch on pressure roller arm assembly (27) slightly.
Mechanical noise.	1. Speed transfer wheel (122) knocks.	1. Rubber particles may be on track when the tape recorder has not been used for some time. Speed transfer wheel (122) will knock for a few minutes after it starts, but the knock later disappears.
	2. Noise from the motor.	2. Replace motor.
	3. Noisy ball bearings in take-up pulley disc (56) or supply pulley disc (96).	3. Replace pulley disc having noisy ball bearings.

TROUBLE CHART (CON'T)

Amplifier does not operate in Playback.	1. Defective tube. 2. Defective recording switch	1. Replace any defective tubes. 2. Replace recording switch.
Low output in Playback.	1. Tape does not run correctly.	1. Iron oxide on the playback head, or defective playback head. Remove any iron oxide with a clean, soft cloth. If playback head is defective, replace.
Overlapping of upper and lower recording tracks.	1. Wrong positioning of one or both heads.	1. Check heads for proper adjustment. See "Erase and Record-Playback Head" under "Mechanical Adjustments."
Insufficient erasure.	1. Break in erase head (11) coil. 2. Erase head (11) incorrectly positioned. 3. Short circuit on the head mounting strip. 4. Bias oscillator tube does not oscillate.	1. Replace erase head (11). 2. Check head for proper adjustment. See "Erase and Record-Playback Head" under "Mechanical Adjustments." 3. Correct the short. 4. Replace bias oscillator tube and check for faulty components in circuit.

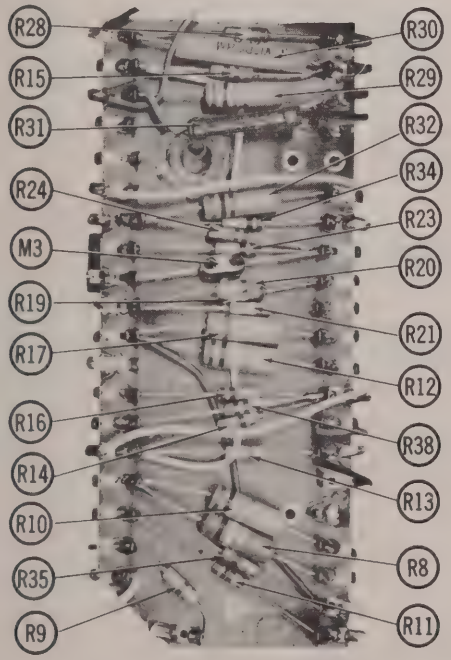
MECHANICAL PARTS LIST

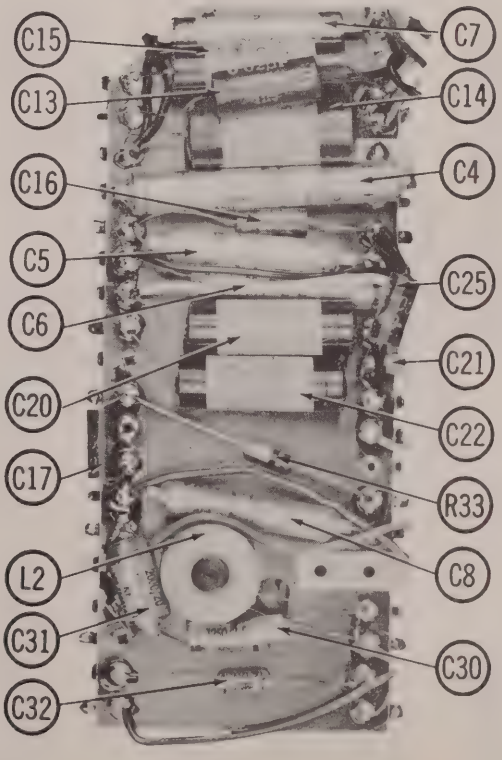
Ref. No.	Part No.	Description
1	1552	Speed Selector Knob
2		Set Screw
3	2K3S	Rear Trim Cover Mounting Screw
4	1549	Rear Trim Cover
5	2K3S	Front Trim Cover Mounting Screw
6	1550	Front Trim Cover
7	1554	Operating Lever Knob
8		Top Cover Mounting Screws
9	2STP	Steel Top Plate Model 2
	3STP	Steel Top Plate Model 3B
	2FSTP	Steel Top Plate Model 2F
10	23RPH	Record-Playback Head (Specify Model)
10A	HM2	Head Adjusting Screw
11	23REH	Erase Head
12		Tape Counter Mounting Screws
13	KH-143	Tape Counter
14		Retaining Ring
15		Operating Lever Dress Plate
16		Mechanical Mounting Screw(4)
17		Washer
18		Operating Lever Plate
19		Washer
20		Top Baseplate Mounting Screw
21		Lockwasher
22		Top Baseplate
23		Right Tape Guide Screw
24		Lockwasher
25	ATG	Right Tape Guide
26		Tension Spring
27	237	Pressure Roller Arm Assy.
27A	236	Pressure Roller, 50 Or 60
28		Front Trim Cover Mounting Bracket
29		Rear Trim Cover Mounting Bracket
30	AHTG	Adjustable Tape Guide
31		Retaining Ring
32		Tape Guide Bracket
33	235	Pressure Pad and Spring
34	1551	Volume Control Knob
35	1553	Record-Playback-Public Address Knob
36		Set Screw
37		Left Tape Guide
38		Lockwasher
39	ATG	Left Tape Guide
40		Rubber Mounting Grommet
41		Rubber Spacer
42		Pressure Roller Actuating Lever
43		Retaining Rings
44		Positioning Lever Tension Spring
45		Washer
46		Lockwasher
47		Screw
48	1700	Flexible Counter Coupling
49		Drive Actuating Lever
50		Pressure Roller Positioning Roller
51		"C" Washer
52	1640-T	Take-up Turntable
53	AF23	Flange For Housing With Adhered Felt
54		Spacer
55		Lockwasher
56	1641	Take-up Pulley Disc
56A	2333	Ball Bearing and Cartridge Assembly
57	1639	Drive and Rewind Belt
58	1642	Compression Spring For Friction Disc
59		Speed Positioning Arm Pin
60		Speed Selector Bracket
61		Speed Selector Adjusting Bracket
62		Set Screw
63	A-1638	Motor Pulley Model 2, 2F
	1638	Motor Pulley Model 2 Hi-Fi, 3B
64		Speed Positioning Arm Spring
65		Speed Positioning Arm

MECHANICAL PARTS LIST (CON'T)

Ref. No.	Part No.	Description
66		Retaining Ring
67		Retaining Ring
68		Fibre Washer
69	1230	Extension Spring For Speed Transfer Wheel
70		Speed Transfer Wheel Mounting Lever
71		Fibre Washer
72		Speed Transfer Wheel Mounting Arm
73		Lower Clutch Lever Spring
74		Upper Clutch Lever Spring
75	2321	Lower Clutch Lever
76	2332	Upper Clutch Lever
77		Red Felt Washer
78		Record Lock Lever Springs
79		Record Lock Lever
80		Retaining Ring
81		Screw
82		Washer
83		Stop (For Item 72)
84		Pin Positioning Arm
85		Roller Positioning Arm
86		Compression Spring Retainer
87		Compression Spring
88		Fibre Washer
89		Speed Positioning Cam
90		Retaining Ring
91		Mounting Spring
92	1640-S	Supply Turntable
93	AF23	Flange For Housing With Adhered Felt
94		Washer
95		Lockwasher
96	1641	Supply Pulley Disc
96A	2333	Ball Bearing and Cartridge Assy.
97		Retaining Ring

Ref. No.	Part No.	Description
101		Supply Clutch Lever Spring
102		Retaining Ring
103		Bottom Baseplate
104		Operating Lever
105		Operating Lever Bracket
106		Screws
107		Operating Lever Return
108		Retaining Ring
109		Retaining Ring
110		Lockwasher
111		Motor Starting Capacitor
112		Washer
113		Motor Grommet (3)
114		Motor Mounting Nuts
115		Lockwasher
116		Washer
117		Motor Mounting Plate Nut
118		Motor 60 Cycle
119	1636	Speed Selector Shaft
119A	2398	Speed Selector Shaft Pin, Used Only on 3 Speed Models.
120		Washer
121		Hairpin Clip
122	1637	Speed Transfer Wheel
123		Clutch Lever Pins
124		Operating Lever Actuating Lever
125		Retaining Ring
126		Trip Bar
127		Trip Bar Spring
128	238	Capstan Flywheel Assembly-50 Or 60 Cycle
129	SHB23	Shaft Housing With Bearing
130	EMP-3	Fibre Mounting Plate For Model 3B
98		Compression Spring
99		Supply Clutch Lever
100		Mounting Pin For Supply Clutch Lever





ELECT. PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	Preamplifier	EF804
V2	AF Amplifier	ECC83/12AX7

ITEM No.	USE	TYPE
V3	Record Level Indicator	EM71
V4	Output - Bias Osc.	EL84/6BQ5

① Domestic type listed may not be directly interchangeable in some instances.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	TANDBERG PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	350		AFHS-123-30	C0225	FP333.5	TMT-28	T-135	
B	20	350	①		BR1045		TD-20-350	MT-4530	
C	10	350	①						
C2	2000	8	②	PRS6V2000	BR20001		TD-2000-6		TVA-1106
C3	16	350		PRS350V16	BR1635	TC64	TD-16-350	MT-3516	
C4	4	350	③	PRS350V4	BR435	TC60	TD-4-450	MT-4504	TVA-1601
C5	25	15		SRE25V25	BBR25-25	TC26	TD-25-25	MT-0225	TVA-1205
C6	25	15		SRE25V25	BBR25-25	TC26	TD-25-25	MT-0225	TVA-1205
C7	25	15		SRE25V25	BBR25-25	TC26	TD-25-25	MT-0225	TVA-1205
C8	25	15		SRE25V25	BBR25-25	TC26	TD-25-25	MT-0225	TVA-1205

① Some versions may combine C1B and C1C in a 30mfd section.
② Not used in some versions.
③ Some versions may use 2mfd in this application.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	TANDBERG PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C9	30	125		1468-00003	DD-300	5W5Q3		1FM-43	
C10	33			1468-000033	DD-330	5W5Q33		1FM-433	Note 1
C11	200			1468-0002	DD-201	5W5T2	MC237	1FM-32	Note 2
C12	.001	400		P488N-001	D6-102	CUB4D1	GEM-421	4TM-D1	Note 3
C13	.02	350		P488N-02	DD-203	CUB4S2	GEM-412	4TM-S2	Note 4
C14	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C15	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	Note 5
C16	.01	400		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C17	.01	400		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	Note 6
C18	.04	50		P288N-04	DF-403	CUB6S4	GEM-414	4TM-S4	Note 7
C19	.01	50		P288N-01	D6-103	CUB4S1	GEM-411	4TM-S1	Note 7
C20	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C21	10			SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C22	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C23	100			1468-0001	DD-101	5W5T1	MC235	1FM-31	Note 8
C24	125			1468-00013	DD-131	5W5T13		1FM-313	Note 9
C25	.01	400		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C26	.02	50		P288N-02	DD-203	CUB2S2	GEM-412	2TM-S2	
C27	2500			1467-0025	DD-252	1W5D25	MC46	1FM-225	Note 10
C28	800			1468-0008	DD-801	1W5T8	MC251	MS-38	Note 11
C29	600			1468-0006	DD-601	1W5T6		MS-36	Note 12
C30	1250	500							Note 13
C31	2000	500		1468-002	DD-202	1W5D2	MC457	1FM-22	
C32	1000	125		1468-001	DD-102	1W5D1	MC255	1FM-21	
C33	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C34	1.2	350							Note 14

Note 1. Some versions may use 100mmf. Other versions may use 200mmf in this application.
Note 2. Some versions may use 600mmf. Other versions may use 500mmf in this application.
Note 3. Some versions may use 2500mmf. Used in Model 3B only.
Note 4. Some versions may use 8000mmf. Other versions may use 5000mmf in this application.
Note 5. Some versions may use 10000mmf in this application.
Note 6. Some versions may use 4000mmf in this application.
Note 7. Not used in some versions.
Note 8. Models 2 and 2F use 460mmf in this application.
Note 9. Some versions may use 130mmf. Others may use 200mmf in this application.
Note 10. Models 2 and 2F may use 1000mmf in this application.
Note 11. Models 2 and 2F may use 500mmf in this application.
Note 12. Models 2 and 2F may use 800mmf in this application.
Note 13. Models 2 and 2F may use 5000mmf in this application.
Note 14. Not used in Models 2 and 2F.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	TANDBERG PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	1631	B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	TANDBERG PART No.	NOTES
R2	10K			
R3	510K			
R4	5.1meg			Note 1
R5	18K			Note 2
R6	13K			Note 3
R7	51K			Note 4
R8	200K	1		
R9	3300Ω			Note 5
R10	1meg	1		
R11	2000Ω			
R12	100K	1		
R13	3900Ω			
R14	33Ω 5%			Note 6
R15	8200Ω			
R16	1meg			
R17	82K	1		
R18	150K			Note 7
R19	150K			Note 8
R20	510K			Note 4

ITEM No.	RATING OHMS	RATING WATT	TANDBERG PART No.	NOTES
R21	330K			
R22	10meg			
R23	200K			
R24	1.2meg			
R25	200K	1		
R26	20K	1		
R27	2000Ω			
R28	150K			
R29	51K	1		
R30	51Ω			
R31	8000Ω			
R32	200Ω 5%	1		
R33	100K			
R34	10K			
R35	51K			
R36	30K	1		
R37	50Ω			
R38	510Ω			

Note 1. Some versions may use 5meg in this application.
Note 2. Some versions may use 39K or 100K in this application.
Note 3. Some versions may use 20K in this application. Not used in Models 2 and 2F.
Note 4. Not used in some versions.
Note 5. Some versions may use 5600Ω. Models 2, 2F use 39K in this application.
Note 6. Some versions may use 82Ω in this application.
Note 7. Some versions may use 330K in this application.
Note 8. Some versions may use 200K in this application.

COILS (RF-IF)

ITEM No.	USE	TANDBERG PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	66 KC Trap						
L2	Bias Osc.						
L3	66 KC Trap						

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	TANDBERG PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L4	.050A	600Ω	13 Hy.	NR677	C5004	C-2987①		C-1708 ①	26C87 ①	C-5X ①

① Drill new mounting hole.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	TANDBERG PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	245V Tap ⓖ 220V, 200V, 145V, 125V 110V, 105V . 41A ⓖ 117V	280V ⓖ .060A	6.3V ⓖ 1.5A	NR262						
		SEC. 4	SEC. 5							

ELECT. PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	TANDBERG PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6000Ω	3-4Ω	NR678	Z1112	A-2935	AU-606	A-3824	24S55	S-5X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TANDBERG PART No.	QUAM PART No.	
SP1	4" x 7"	PM	3-4Ω	2238		

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	TANDBERG PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.05A	B250C75L				
M2	.2A	B250C600		C1B	604B	Not used in some versions.
M3	Signal	E375-C2	1215	1T1		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			TANDBERG PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M4		.3A 250V S/B	①					
M5		1A 250V	①					
M6		.16A 250V	①					
M7	Thermal Rose Metal							

① Not used in some versions.

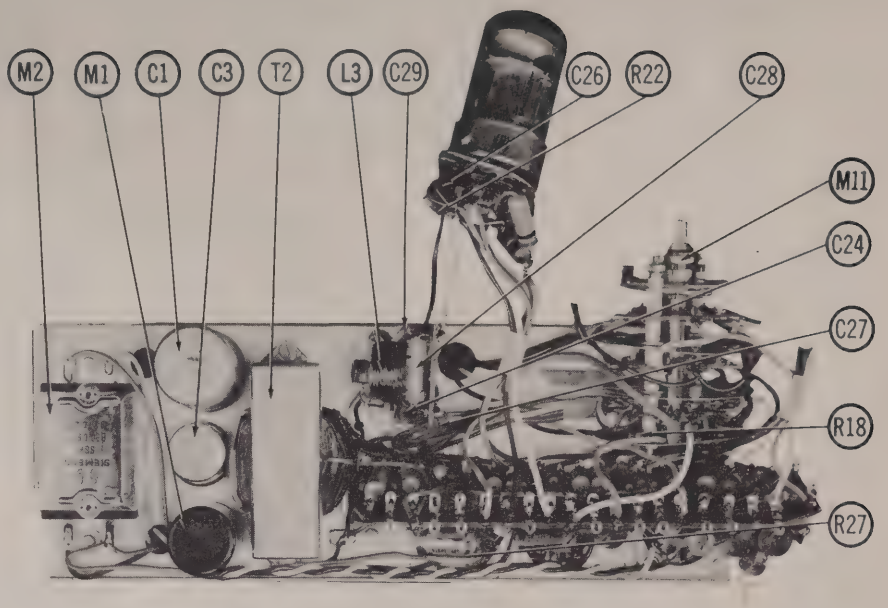
MISCELLANEOUS

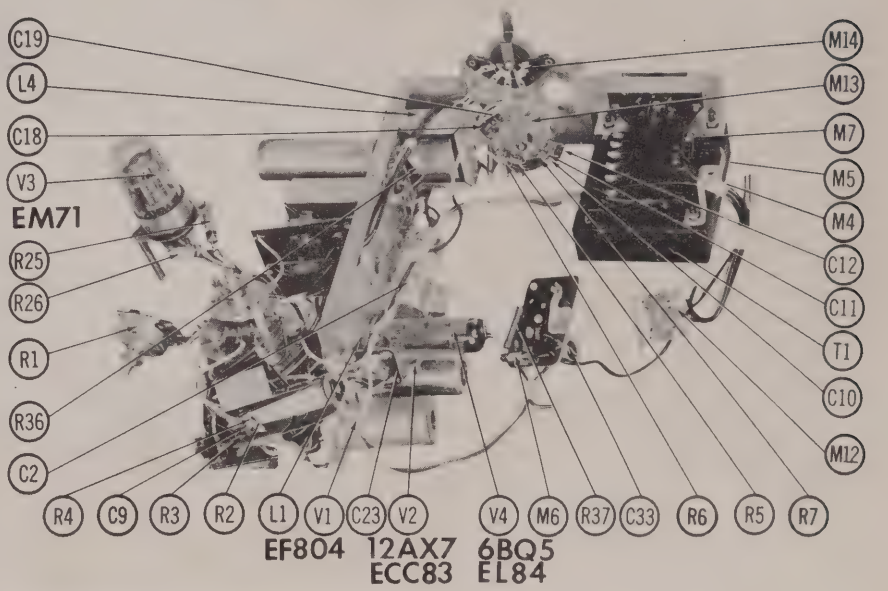
ITEM No.	PART NAME	TANDBERG PART No.	NOTES
M8	Erase Head	23REH	
M9	Record-Playback Head	23RPH	Specify Model
M10	Lamp		Mazda #3586
M11	Switch	1627	Function, 3 Section, Rotary Wafer Type
M12	Switch	1634	Power On-Off, Rotary Wafer Type
M13	Switch	1635	Speaker Selector, Rotary Wafer Type
M14	Switch	23DD	Speed, Rotary Wafer Type, Model 3B
M15	Switch	1633	Motor (Microswitch)
M16	Motor	562-L	Model 2
	Motor	562-2L	Model 3

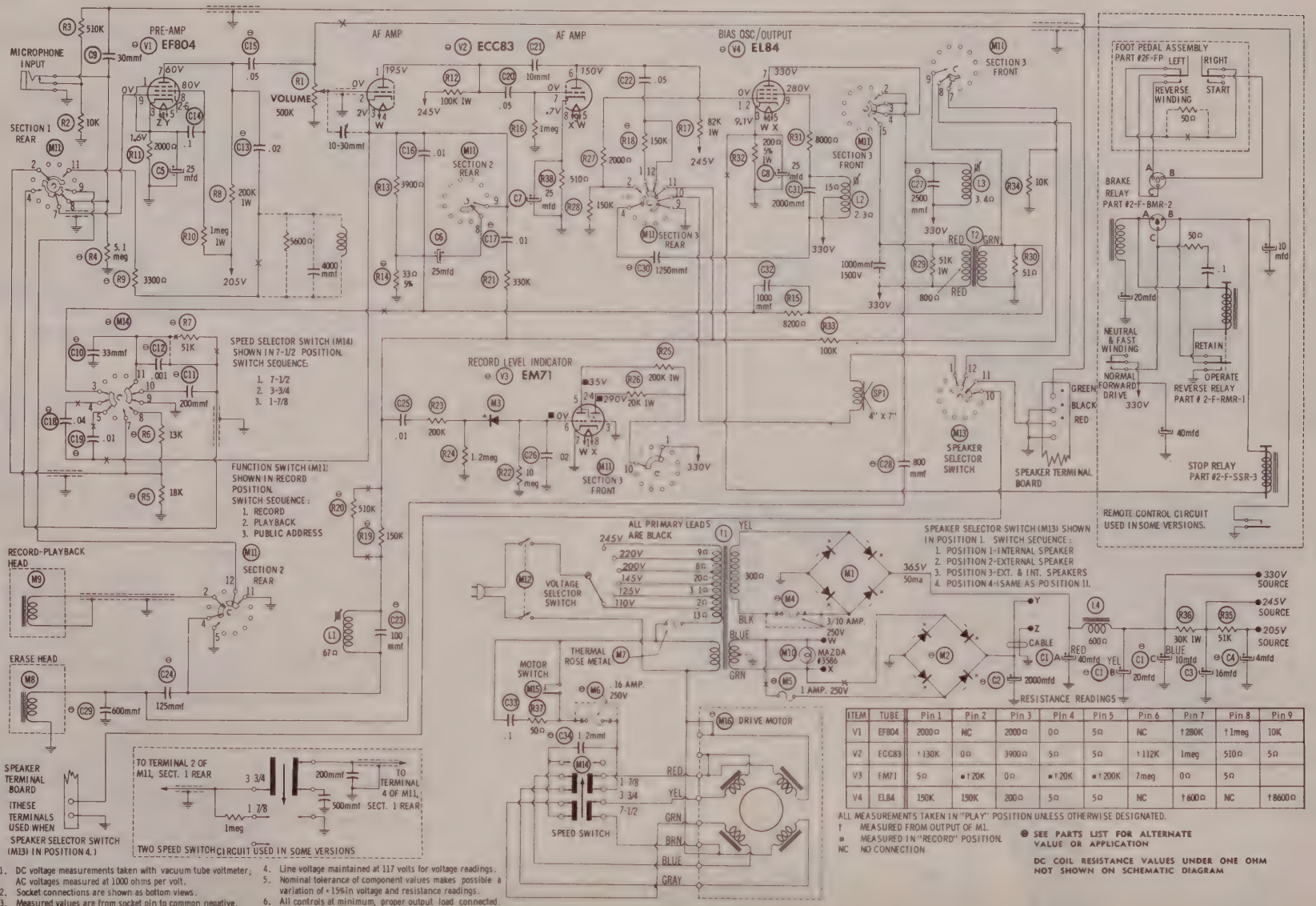
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

ELECT. CHASSIS







ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	EF804	2000Ω	NC	2000Ω	0Ω	5Ω	NC	†280K	†1meg	10K
V2	ECC83	†130K	0Ω	3900Ω	5Ω	5Ω	†112K	1meg	510Ω	5Ω
V3	EM71	5Ω	●†20K	0Ω	●†20K	●†200K	7meg	0Ω	5Ω	
V4	EL84	150K	150K	200Ω	5Ω	5Ω	NC	†600Ω	NC	†8600Ω

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM OUTPUT OF M1.
● MEASURED IN "RECORD" POSITION.
NC NO CONNECTION

◉ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

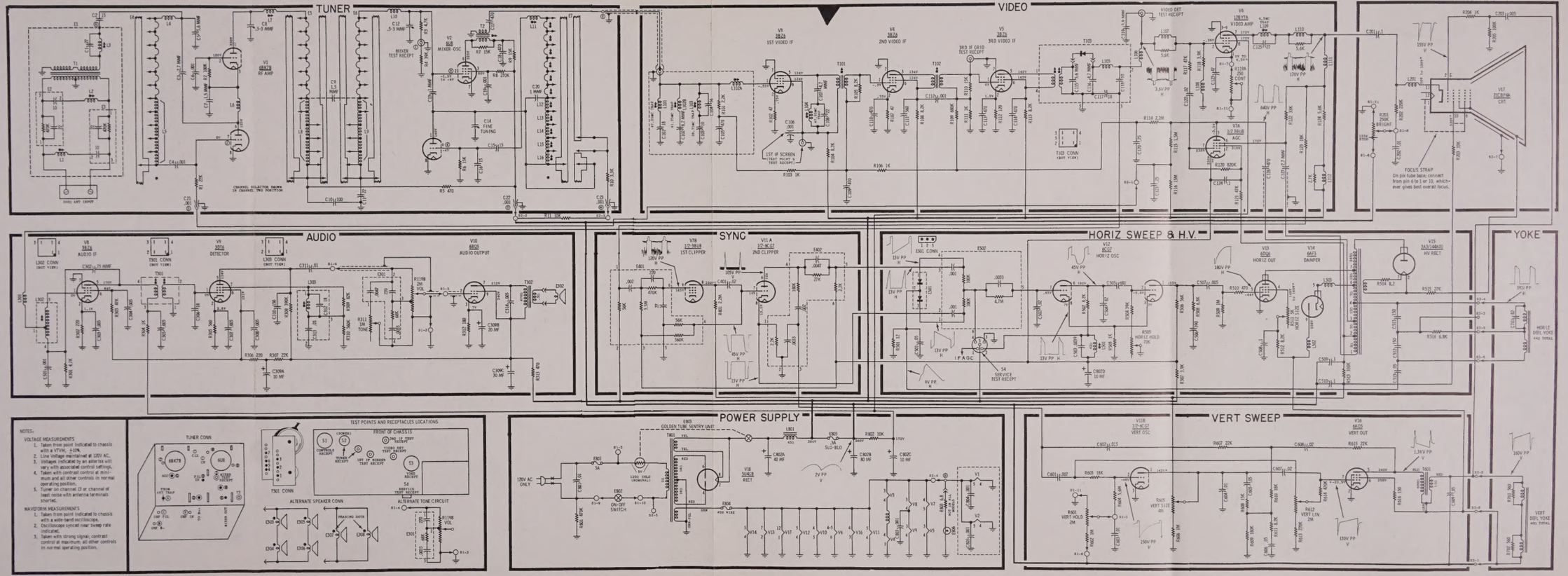
A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1959

TANBERG
MODELS 2, 2F, 3, 3B

MOTOROLA

MOTOROLA MODELS
A21K95M, A21K103B, M, MC, Y21K95B, M, Y21K98B, M, W, Y21K101B, M, W, Y21K103B, M, 21K101B, M, 21K101W, 21K102CW, 21K103B, CW, M, MC, 21K106B, M, 21T58BG, CH, MG, 21T60BG, CH, MG (Ch. NTS-544, QTS-544, RTS-544, Y, STS-544, Y)

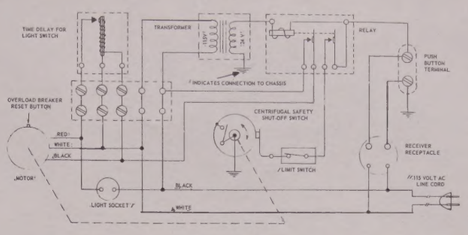

MOTOROLA
TUNER
VIDEO
AUDIO
SYNC
HORIZ SWEEP & H.V.
YOKE
POWER SUPPLY
VERT SWEEP
TEST POINTS AND RECEPTACLES LOCATIONS
TUNER CONN
ALTERNATE SPEAKER CONN
ALTERNATE TONE CIRCUIT
NOTES:
VOLTAGE MEASUREMENTS
1. Taken from point indicated to chassis with a VTVM, ±10%.
2. Line Voltage maintained at 120V AC.
3. Voltages indicated by an asterisk will vary with associated control settings.
4. Taken with contrast control at minimum and all other controls in normal operating position.
5. Tuner on channel 13 or channel of least noise with antenna terminals shorted.
WAVEFORM MEASUREMENTS
1. Taken from point indicated to chassis with a wide-band oscilloscope.
2. Oscilloscope synced near sweep rate indicated.
3. Taken with strong signal, contrast control at maximum, all other controls in normal operating position.

© Howard W. Sams & Co., Inc. 1959

SET 433 FOLDER 14-S

Schematic Diagram Courtesy of MOTOROLA INC.

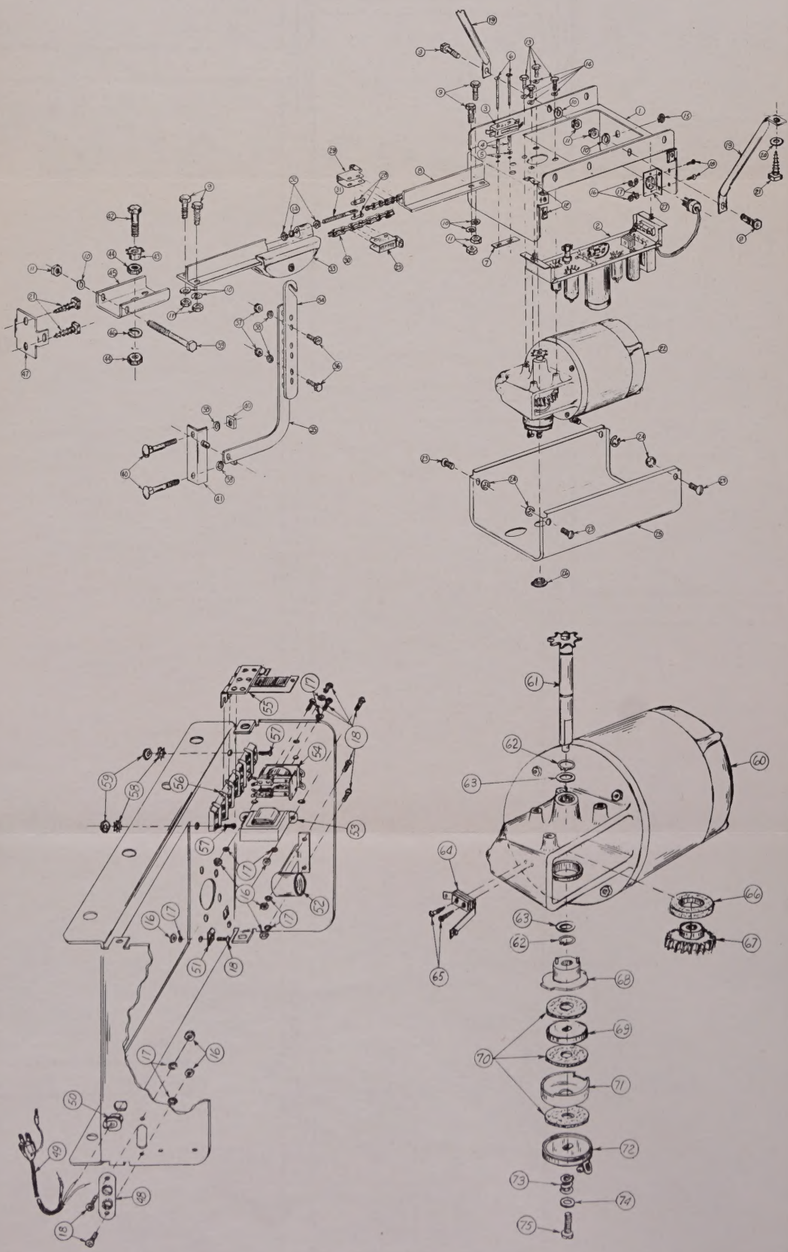
Electrical wiring diagram



Schematic Diagram Courtesy of PERMA-POWER Co.

Ref. No.	PART DESCRIPTION	Part No.	Quantity
1	CHASSIS	37C8	1
2	RECEIVER ASSEMBLY	1A37	1
3	LIMIT SWITCH	180A8	1
4	SPACER – Limit switch mounting	184A5	2
5	FLAT WASHER – #6	—	2
6	SCREW – R.H. 6-32 x 2	—	2
7	SPEED NUT – Twin – 6-32 x 1" centers	133A2	1
8	RAIL – 1-1/2" x 1-1/2" x 3/16 Tee	183B2	1
9	SCREW – Hex. Hd. Cap. 3/8-16 x 1	—	6
10	LOCKWASHER – Split 3/8	—	7
11	NUT – Hex. 3/8-16	—	7
12	SPEED NUT – U Type 1/4-20	—	6
13	SCREW – Hex. Hd. Cap. 1/4-20	—	4
14	LOCKWASHER – Split 1/4	—	6
15	HOLE PLUG – 3/8" hole	31A12	1
16	NUT – Hex. 6-32 x 1/4	—	10
17	LOCKWASHER – #6	—	12
18	SCREW – Phillips Bin. Hd. 6-32 x 3/8	—	12
19	HANGING PIPE – 1/2" seamless tubing 10' NOTE: Supplied not cut, drilled or formed.	206A1	1
20	WASHER – Wrought – 5/16	—	2
21	SCREW – Lag – 3/8 x 2 Anneald	—	2
22	MOTOR DRIVE ASSEMBLY. NOTE: Assembly includes reference numbers 60 to 75.	1A38	1
23	SCREW – Captive	171A1	4
24	RETAINING RING – Type "E"	158A4	4
25	COVER	31D10	1
26	HOLE PLUG – 1" hole	31A13	1
27	BRACKET AND SOCKET ASSEMBLY – 4 Prong socket	1A39	1
28	MASTER LINK – #48 Chain	22A1ML	2
29	CHAIN DOG ASSEMBLY	1A40	2
30	ROLLER CHAIN – #48 1/2 Pitch	22A1	20'
31	STUD – Chain end fastening	179A2	2
32	NUT – Hex. 1/4-20	—	4
33	TROLLEY ASSEMBLY.	1A41	1
34	DOOR ARM – Straight section	178A2	1
35	DOOR ARM – Curved section	178A1	1
36	SCREW – Hex. Hd. Cap. 5/16-18 x 1	—	2
37	NUT – Hex. 5/16-18	—	2
38	LOCKWASHER – Split 5/16	—	4
39	SCREW – Hex. Hd. Cap. 3/8-16 x 3-1/2	—	1
40	CARRIAGE BOLT – 5/16 x 2-1/2	—	2
41	DOOR BRACKET ASSEMBLY	1A42	1
42	SCREW – Hex. Hd. Cap. 1/2-13 x 2 (Hardened)	—	1
43	SPROCKET – 8 tooth	81A1	1
44	NUT – Hex. Jam 1/2-13	—	2
45	BRACKET – Sprocket mounting	12A12	1
46	LOCKWASHER – Split 1/2	—	1
47	BRACKET – Hinge	12A13	1
48	TERMINAL BOARD – 2 Binding post	14A4	1
49	LINE CORD – Type SJ-18/3 4'	26A2	1
50	STRAIN RELIEF BUSHING	13A4	1
51	CABLE CLAMP – Plastic 3/16 dia.	28A3	2
52	LIGHT SOCKET	175A8	1
53	TRANSFORMER – 115 V pri. 24 V sec.	204A20	1
54	RELAY	160A4	1
55	LIGHT DELAY SWITCH ASSEMBLY	1A35	1
56	TERMINAL BOARD	14A3	1
57	SCREW – Rd. Hd. 8-32 x 5/8	—	2
58	LOCKWASHER – #8	—	2
59	NUT – Hex. 8-32	—	2
60	MOTOR	123D2	1
61	SHAFT AND SPROCKET ASSEMBLY	1A43	1
62	RETAINING RING	158A5	2
63	SHIM WASHER	216A1	2
64	BRUSHOLDER ASSEMBLY	1A34	1
65	SCREW – Self tapping #4 x 5/8	—	2
66	FELT OIL RING	158A3	1
67	WORM GEAR	81A4	1
68	CLUTCH BUSHING ASSEMBLY	1A36	1
69	CLUTCH PLATE	142A7	1
70	FRICTION DISC	142A10	3
71	CLUTCH HOUSING	93A1	1
72	COMMUTATOR AND SWITCH ASSEMBLY.	1A45	1
73	SPRING – Clutch	177A7	1
74	WASHER – 1/4" ID x 3/4" OD.	216A2	1
75	SCREW – Fil. Hd. 1/4-28 x 3/4 NOTE: Give both description and part number when ordering. Do not use reference number.	—	1

REPLACEMENT PARTS LIST



GARAGE DOOR OPERATOR

Exploded View Courtesy of Perma-Power Company